THE AMERICAN
# GAS LIGHT JOURNAL

VOL. XCV., No. 20. NEW YORK, NOVEMBER 13, 1911. WHOLE NO. 1,901.

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## Illuminating Engineering and Its Application to the Gas Industry.

[Prepared by MR. E. LEAVENWORTH ELLIOTT, for the Denver Convention, National Commercial Gas Association.]

In discussing this subject we propose to use the term illuminating engineering in its broadest possible sense. The meaning of the term has been often misunderstood, and in some cases misrepresented. Illuminating engineering is the application of modern scientific methods to the subject of lighting. In its broadest sense it is a systematic effort to secure the best possible illumination with the facilities available and under the conditions prescribed. Its purpose is to substitute the application of fixed laws, with the resulting certainty in results, in place of the old rule-of-thumb practice, with the chances overwhelmingly against the guess being right.

Of course it has met the usual throng of "practical" light installers, who, starting as plumbers' apprentices and office boys, made their way to the top over a path lubricated with elbow grease and charted by the rule-of-three, and who have expressed their opinion of all such new-fangled notions, and reminded the world of the obvious fact that it got along very well with the lighting it had before these "high-brows" got in the game at all. This reference to the existence of the human race before the present regime came in is supposed to be the final argument. Is there any denying the fact? By no means. The human race has gotten on and was apparently contented with itself from the time that it was chattering in the tree tops or mauling one another with bones in a cave.

The logical conclusion to the argument, however, would be the immediate cessation of all progress. What was good enough yesterday is *not* good enough to-day, if there is something better to be had. This is the only doctrine upon which civilization can advance. We got along without artificial lighting when the best we could do was a pine knot or a tallow dip; but we got along better when we had the petroleum lamp with a good glass chimney, and we got along still better when we had the gas flame, and again better when we had the incandescent gas mantle. So we shall get along better with an intelligent use of every lighting device and accessory that can improve the quality of illumination.

To laugh at the argument which cannot be met is an old trick that has been worked by the politician and salesman time out of mind; and to belittle knowledge is the last refuge of the ignorant. It was not long ago that the output of a blast furnace depended upon the personal opinion formed as a result of looking into the bowels of the furnace through a peep-hole. When it was proposed to substitute chemical analysis of the raw materials and the resulting products for the art of guessing, the professional guessers scoffed at the idea, just as the old-time, out-of-date farmer still scoffs at the work of the agricultural colleges. But science, which has been well defined as classified knowledge, will always beat out guessing, even by the most astute guesser; and so the iron master who squinted in at his furnace has disappeared along with the peep-hole provided for his squinting, and the farmer who sows and reaps by the moon is having his mortgage foreclosed by the agricultural college graduate. Certainty wins in the race with guesswork every time.

To deny that there is a large and legitimate field for illuminating engineering in gas lighting is to assume that there is no further room for improvement in the production or use of gas light, a proposition which it would be difficult to maintain; and yet in face of its evident absurdity the statement has been repeatedly made. To the outside observer it appears that there is no part of the general field of illumination which is in such urgent need of illuminating engineering as gas lighting. This is due partly to the inevitable effects of time. Gas lighting is something over a century old. Its pioneers and their immediate successors are now veterans. There is no use denying the fact that there comes a time in the life of every individual when he ceases to grow intellectually, just as surely as the time comes when he ceases to grow physically. In infancy our universe is bounded by the four walls of the room in which we lie. As we grow in stature and understanding these limits expand and continue their expansion so long as we continue to grow; but after a certain lapse of time our universe begins to close in upon us, until our horizon is again bounded by four walls, and at last hides us within the confines of the grave. "Once a man, twice a child" is the condensed history of human life. When we begin to look back and cling to the things that were, instead of looking forward and grasping after the better things to be, we may feel sure that our universe is beginning to contract, and that it is time we handed over the affairs of life that demand aggressive action to those whose vision is still expanding. It is a simple recognition of this eternal law of nature rather than a reflection upon the individual, to state that gas lighting, by the simple fact of its century of existence, contains a considerable personal element which has outlived the period of mental expansion.

On the other hand, the chief competing illuminant, electricity, has been born and grown up within the memory of those still far this side of the turning point in their mental outlook; it is an industry of young men. "Old men for counsel, young men for war" was a proverb of the native redman. Commerce is much more a case of war than philosophy; and as our Puritan forefathers were admon-

## Analysis of the New Business Activities of Twenty-five Gas Companies for the Years 1908-'09-'10

| Number of inhabitants in city | Gross income from sale of gas | Net price per 1,000 cu. ft. for | Gross value of lighting supplies and apparatus sold | Gross value of all other apparatus and supplies for the consumption of gas sold | Estimated proportion of gas used for illuminating purposes | Estimated proportion of gas used in open flames to that used in incandescent burners | What were your total expenditures for publicity in | To what extent do you advertise in your local newspapers? | What other means of publicity do you use? | What proportion of this publicity was devoted to promoting gas illumination? | Have you a special new business dept.? When organized? | Do you make systematic use of illuminating engineering? | What do you consider the most profitable field for extending gas illuminations at the present time? | What is your personal opinion as to the immediate future of gas lighting? | Do you regularly employ an illuminating engineer, to whom you give the title? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31,000 | 1908 . . $1,251,453<br>1909 . . 1,341,251<br>1910 . . 1,476,230 | Ranging from $1.00 to $1.50, varying in geographical districts | Company does not sell lighting supplies | 1908 . . 19,344<br>1909 . . 31,744<br>1910 . . 33,302 | 1908 . . 62.6%<br>1909 . . 56.5<br>1910 . . 56.5 | 1908 . .<br>1909 . .<br>1910 . . | Five or six thousand dollars per annum | | Folders, circulars, return postals, adv. pamphlets | No special effort made; only touched upon in a general way | Yes, 3 years ago | To a limited extent | The exploitation of intensified gas lighting systems | This will be determined largely by the amount of energy and intelligence displayed by the gas man | Yes |
| 36,000 | 1908 . . 122,396<br>1909 . . 120,670<br>1910 . . 134,967 | 1908 . . $1.13.38<br>1909 . . 1.13.48<br>1910 . . $12.75 | 1908 . . 6,550<br>1909 . . 9,334<br>1910 . . 10,452 | 1908 . . 4,880<br>1909 . . 6,750<br>1910 . . 10,773 | | | 1908 . . $1,356<br>1909 . . 1,044<br>1910 . . 926 | All city papers and one outside of city | Canvassing, circulars, letters, etc. | | Yes, about a year | Yes | Use of gas for industrial purposes and all year cooking | Standard illumination will be constantly raised and gas will make rapid strides | |
| 213,000 | | 1908 . . 0.87<br>1909 . . 0.92<br>1910 . . 0.82 | 1908 . . 2,837<br>1909 . . 3,267<br>1910 . . 3,411 | 1908 . . 89,479<br>1909 . . 108,579<br>1910 . . 114,338 | 1908 . . 20%<br>1909 . . 16%<br>1910 . . 10% | | 1908 . . 57<br>1909 . . 59<br>1910 . . 63 | Largely | Circulars, letters and billboards | Small amount | Yes, about 10 years ago | Yes | Personal solicitation | Bright | Yes |
| 133,000 | 1908 . . 136,612<br>1909 . . 169,932<br>1910 . . 207,342 | 1908 . . 2.00<br>1909 . . 2.00<br>1910 . . 1.90 | | | 1908 . . 15%<br>1909 . . 15%<br>1910 . . 15% | 1908 . . 15%<br>1909 . . 15%<br>1910 . . 15% | 1908 . . 3,800<br>1910 . . 4,000<br>1910 . . 3,000 | Almost entirely | "Ads." in benefit pamphlets | None | No | No | Gas arcs and small lights for homes | There is a fine field if pushed and closely supervised | No |
| 5,000 | 1908 . . 27,982<br>1909 . . 37,621<br>1910 . . 40,727 | 1908 . . 1.25<br>1909 . . 1.25<br>1910 . . 1.25 | No accurate record kept | 1908 No record<br>1909 396<br>1910 2,163 | | | 1908 . .<br>1909 . . 713<br>1910 . . 995 | Daily advertisements | Circular and letter campaign | 10% | Yes, 1909 | No | House lighting | Gas is rapidly being replaced by electricity; future field is limited | No |
| 30,000 | 1908 . . 216,854<br>1909 . . 228,896<br>1910 . . 231,456 | 1908 . . 1.19<br>1909 . . 1.16<br>1910 . . 1.13 | 1908 . . 20,500<br>1909 . . 26,925<br>1910 . . 25,054 | 1908 . . 13,809<br>1909 . . 14,954<br>1910 . . 13,494 | 1908 . . 65%<br>1909 . . 60%<br>1910 . . 55% | 1908 . . 70%<br>1909 . . 75%<br>1910 . . 80% | 1908 . . 936<br>1909 . . 1,323<br>1910 . . 1,921 | 4 x 5 space, 5 papers (each) daily | Theater program, booklets and illuminated signs, gas bills (back) | 1/2% | Yes, 1910 | Yes | Small units | Its gradual displacement by electric lighting | Yes |
| 518,000 | 1908 . . 7,170,396<br>1909 . . 7,709,153<br>1910 . . 8,340,858 | 1908 . . 1.15<br>1909 . . 1.00<br>1909 . . 1.10<br>1.00<br>1910 . . 1.00<br>Wholesale rates | 1908 . . 97,791<br>1909 . . 130,052<br>1910 . . 188,196 | 1908 . . 208,615<br>1909 . . 394,143<br>1910 . . 423,375 | 1908 . . 13.5%<br>1909 . . 13.5<br>1910 . . 13.5 | 1908 . . 13.5%<br>1909 . . 13.5<br>1910 . . 13.5 | 1908 . . 926<br>1909 . . 1,570<br>1910 . . 3,060 | Moderate extent | Circular letters, catalogues, stickers on bills, model salesroom | 1908 . . 30%<br>1909 . . 30%<br>1910 . . 30% | Yes, in various years between 1892-1903 | Yes | Residences, apt. houses, stores, saloons and factories | Very good if the field is thoroughly cultivated and modern high candle power lamps sold | Yes |
| 93,000 | | | | | 1908 . . 18%<br>1910 . . 20%<br>1910 . . 21% | No gas used here in open flame burners as everything has been with Welsbach or mantle burners | $1,000 per year | Double column "ad." once a week in each of 4 daily papers | Circular letters, gas bill stickers, billboards, cook books and pamphlets on lighting, etc. | 1/2% | Yes, June, 1906 | | Store lighting, outside lighting, whiteway lighting, residence lighting | Severe competition from the electric people, but coming season offers as good prospects as ever had | No. |
| 30,000 | 1910 — | | | | Approximately 1910 . . 30% | Approximately 1910 . . 75% | | About $1,500 a year | Mailing cards, stickers on bills, car advertising, personal letters, catalogues | 1/2% | Yes, 1910 | Yes | Small stores, etc. use gas arcs to heat their places in winter | Future gas is better than ever | No |
| 104,000 | 1908 . . 182,103<br>1909 . . 208,398<br>1910 . . 206,038 | 1908 . . 1.50<br>1909 . . 1.50<br>1910 . . 1.50 | | | 1908 . .<br>1909 . . 87%<br>1910 . . 85% | 1908 . .<br>1909 . . 30%<br>1910 . . 30% | | $12,000 yearly | | 1/2% | Yes, 1909 | As much as possible | Flat rate out-door lighting | That it will not only hold its own, but most generally preferred by those who are familiar with it | Yes |
| 102,000 | 1908 . . 335,360<br>1909 . . 335,304<br>1910 . . 445,806 | 1908 . . 1.00<br>1909 . . 1.00<br>1910 . . 1.00 | | | | | | Not at all | | | No | No | | | No |
| 19,000 | 1908 . . 211,000<br>1909 . . 266,000<br>1910 . . 197,000 | 1908 . . 1.18<br>1909 . . 1.15<br>1910 . . 1.12 | 1908 . . 10,000<br>1909 . . 10,000<br>1910 . . 10,000 | 1908 . . 30,000<br>1909 . . 35,000<br>1910 . . 40,000 | 1908 . . 30%<br>1909 . . 25%<br>1910 . . 20% | 1908 . . 70%<br>1909 . . 40%<br>1910 . . 30% | | Small "ad." every day, large "ad" Sunday | Street signs, posters, etc. | 1/2% | Yes, 1905 | No | Inverted arcs in stores | Very good | No |
| 18,000 | 1908 . . 76,000<br>1909 . . 73,700<br>1910 . . 75,000 | 1908 . . 1.13<br>1909 . . 1.00<br>1910 . . 1.00 | | | 1910 . . 40% | 1910 . . 10% | 1910 . . 1,500 | Daily | Solicitation and illumination | 1/2% | Organizing | Beginning to | Inverted arcs in business houses | Very encouraging | No |
| 29,000 | | 1908 . . 1.25<br>1909 . . 1.15<br>1910 . . 1.15 | | | 1908 } 1909 } 1910 } 33% | 1908 } 1909 } 1910 } 33% | | Daily 3 col. 6 in. space, Sunday 4 col. 10 in. space | Gas bills, circulars, display room | 30% | Yes, 1909 | No | Residences | Growing in popularity | |
| 25,000 | 1908 . . 166,126<br>1909 . . 185,187<br>1910 . . 193,873 | 1908 . . 0.88<br>1909 . . 0.85<br>1910 . . 0.98 | 1908 . . 791<br>1910 . . 689 | 1908 . . 21,500<br>1909 . . 27,061<br>1910 . . 25,014 | 30%<br>30%<br>30% | 90%<br>90%<br>90% | 1910 . . 1,820<br>1910 . . 2,165 | To the extent of their bills for gas | None | | Yes, 1905 | No | Residence lighting | Holding own against electric Con., and will continue to | No |
| 11,000 | | 1.15<br>1.15<br>1.15 | 1,000<br>1,800<br>2,500 | 6,800<br>10,400<br>13,100 | 45%<br>30%<br>47% | 15%<br>15%<br>10% | 100<br>225<br>840 | Regularly | Mailing cards, billboards, programs, etc. | 25% | No | No | Outside and interior store lighting | Great, if lamps are kept in first-class condition | No |
| 32,000 | | | | | 41.8%<br>42.3%<br>37.3% | 15%<br>10%<br>10% | 800<br>1,000<br>1,140 | 90% of pub. expenditures | | | Yes, 1907 | No | | Brighter than ever | No |
| 355,000 | 1908 . . 2,731,302<br>1909 . . 2,858,638<br>1910 . . 2,805,601 | | 1908 . . 4,089<br>1909 . . 6,302<br>1910 . . 6,134 | 121,800<br>124,962<br>169,931 | 45% | | 9,069<br>11,313<br>13,700 | 20% of total publicity acct | Form letters and postals | 25% of total | Yes, 1901 | No | Commercial illumination | Sale of gas for illumination should increase | No |
| 80,000 | 1908 . . 422,924<br>1909 . . 417,330<br>1910 . . 461,126 | 0.98<br>0.96%<br>0.90 | 4,926<br>6,057<br>7,179 | 42,833<br>46,063<br>67,153 | 40% | | 2,220<br>2,568<br>4,300 | 50% of total | Letters, catalogues, canvassers | Perhaps 10% | Yes, 1903 | No | Gas arcs for commercial use | With improved burners and mantles, should hold its own | No |
| 61,000 | 1908 . . 105,382<br>1909 . . 96,878<br>1910 . . 103,922 | 1.16<br>1.09<br>1.07 | | | 23%<br>23%<br>20% | 10%<br>None<br>None | 2,496<br>3,132<br>3,360 | Daily | Billboards, demonstrations, etc. | 10% | Yes, 1906 | No | Commercial business with gas arcs | Holding its own in residence, increase in commercial and street lighting | No |
| 44,000 | 1908 . . 358,174<br>1909 . . 338,128<br>1910 . . 345,317 | 1.00<br>1.00<br>1.00 | | | 30%<br>25%<br>20% | 45%<br>40%<br>30% | 900<br>1,370 | ½ page 3 times weekly | None | 25% | Yes, 1906 | No | Store lighting | Great possibilities | No |
| 372,000 | 1908 . . 1,872,363<br>1909 . . 1,966,370<br>1910 . . 2,133,338 | 0.80 to 0.80 | | 34,872<br>55,616<br>75,388<br>For all purposes | 45% | 10%<br>5%<br>5% | 6,321<br>8,472<br>8,839 | 25% of total exp. | Circulars, catalogues, etc. | 45% | Yes, 1901 | No | Commercial lighting | If better methods of lighting are used, gas should not lose out | No |
| Large territory | 1908 . . 4,603,365<br>1909 . . 5,048,401<br>1910 . . 5,411,860 | 0.92½<br>0.92½<br>0.92½ | None | None | 20% | 5% | 17,456<br>47,113<br>16,200 | Entirely | None | None | Yes | No | Commercial | Should increase if vigorously pushed | No |
| 210,000 | 1908 . . 956,000<br>1909 . . 1,017,000<br>1910 . . 1,134,000 | 0.93 | | 131,300<br>171,000<br>181,000<br>For all purposes | 40% | 80% | 12,300<br>11,300<br>9,000 | 3 leading daily papers | Booklets, circular letters | | Yes, 1904 | Yes | Old houses, factories | | Yes |
| 1,550,000 | 1908 . . 7,907,360<br>1909 . . 7,996,377<br>1910 . . 8,343,735 | 1.00 | 153,435<br>229,645 | 327,991<br>335,213 | 22% | | 43,406<br>76,084<br>90,305 | 600 lines per week in 10 dailies | 800 letters daily, circulars, etc. | 33% | Yes, 1908 | Yes | Factories and small stores | Improvements in burners and accessories will make it second to none | No, but employ lighting experts |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

ished to trust in the Lord but keep their powder dry, so commercial progress may listen to counsel, but must not forget to fire and charge.

To come back to direct discourse; the electric lighting interests, being young and eager for the fray, have taken advantage of every improvement and device afforded by science or art to push their lines forward, and have been keen to detect any weakness in the lines of their enemies. Illuminating engineering afforded a potent weapon with which to wield their fight for supremacy. Engineering is based upon commercial economy; and since economy was the one stronghold of gas light, any means of offsetting this advantage was particularly welcome; hence the immediate acceptance of illuminating engineering by those at the front in the electric lighting field.

Let us again revert to our opening statement that we propose to treat the subject in the broadest possible manner. We claim illumi-

nating engineering as an art as well as a science. Better lighting may mean better looking lighting fixtures, as well as more efficient light production; it may mean an illumination more agreeable to the general sense as well as an illumination that is less expensive to maintain. It takes into consideration the artistic, physiological and psychological problems connected with light, as well as the mechanical and economical problems; it considers quality as well as cost.

When the electric light first made its appearance in a form adaptable to domestic use; *i. e.*, the familiar incandescent bulb, electric fixtures were contraband, and were stealthily made in the cellar or garret, and kept in a room safely locked, to which admittance was to be had only by the trusted, initiated few. But the promoters of the new light were wise; they secured the choicest works of art in fixture design that it was possible to obtain, the foremost jewelry designers being called upon for the purpose. The electric lamp thus made its debut in the most fascinating garb procurable; it made a "hit," and has been "hitting it up" at a lively pace ever since, a pace so lively, in fact, that it has left its competitors breathless and wondering how it all happened. In the course of one generation the electric fixture has emerged from its initial hiding place, and occupied the field alone, so far as artistic quality is concerned. This does not mean that there are no artistic gas fixtures, but such as there are, are adaptations of electric designs.

It is the practically universal opinion to-day among users that gas lighting is necessarily inartistic, at least as compared with electricity. Right here is the point where illuminating engineering with gas ought to begin. The user must be shown that it is possible to obtain as artistic fixture designs with gas as with other iliuminants. This requires two things: The artistic fixtures must be actually designed and made, and the consumer must be made aware of the fact of their existence. The fixtures will be produced by the manufacturers when there is a sufficient demand to justify the effort, and this demand must be wholly created by the gas lighting interests. It is immaterial to the fixture trade for what illuminant it makes fixtures, and it cannot have any possible interest in promoting one more than another; the initiative must be taken by the gas people. The question of better fixtures may be considered under two rather distinct heads: The replacing of old and out-of-date fixtures, and new installations.

Lighting fixtures are essentially a part of the furnishing of a room, and they go out of fashion just the same as furniture and carpets. Being less easily removed and less attention being given to them by the householder, however, they very commonly outlive two or three generations of decorative styles in other furnishings. The black walnut dresser or table with a marble top, and the wooden bedstead with a head-board towering to heaven, are now rarities; but the old gas chandelier contemporary with this period of furnishing may still be found in abundance. A change of fixtures is usually an opportunity for changing from gas to electric light. So common is this feeling that many an old time fixture is retained, not because the cost of a new fixture would be prohibitive, but the additional cost of electric wiring raises the sum total to the prohibitive point.

Gas light has been practically routed in this country from the largest commercial buildings and industrial plants. Its one remaining stronghold is the private house, and this stronghold is being vigorously attacked by competing illuminants. No more effective means of insuring the continuance of the use of gas lighting can possibly be devised than the installation of high class lighting fixtures equipped with the best modern gas lamps and accessories. This is practical, constructive illuminating engineering. It is a common practice for the electric companies to wire and equip houses at cost, or at the lowest possible charge, and allow the consumer to pay the bill by installments. The logical course for the gas company, either for the defensive or offensive propagation of its business, is to make a similar offer for the installation of modern fixtures and appliances in place of the inefficient, inartistic, and back-number fixtures now so common.

In the case of new installations there is unmistakably a growing tendency on the part of architects to specify only electric fixtures, except perhaps in the kitchen where gas must be provided for cooking. This, of course, eliminates the additional cost of gas piping which would be required if both luminants were to be provided; although the amount is a trifling percentage of the total cost of building, it amounts to something, and may enable the architect to put an extra flourish on the outside of the house where it will show up his skill. Now that there is no necessity for providing gas in all the rooms as an emergency equipment, the argument has added plausibility. Finally, the combination fixture as generally provided is equipped with so-called candles using the ordinary gas flame, which is neither artistic or efficient.

The first effort of the gas interests should be to educate the architects up to the possibilities of modern gas lighting from the artistic and economic standpoints. Next, to create a sufficient demand to induce the fixture manufacturers to design fixtures in accordance with these principles; and lastly, to educate the householder himself in regard to the general subject of illumination. If combination fixtures, so designed as to enable each illuminant to be used to its best advantage, were installed gas might well take its chances, but under present conditions, the contest is too often an unequal one.

While it would be a comparative waste of effort to attempt to supplant electric light with gas light in the best class of commercial buildings, there is no occasion to abandon the field in the less pretentious cases, and such cases are not confined to third or fourth rate buildings. There are innumerable cases in which gas lighting would be used if it were not for the generally held opinion that it brands the place as second-class. If it were understood that gas lighting installations could be used which the observer would never discover were gas, it would go a long way toward securing favor for commercial use. From the illuminating engineering standpoint nothing is easier to do than this; in fact, it is a settled principle of illuminating engineering that the source of light itself should not be visible, all modern light-sources being too dazzling for direct view. Such being the case there is no reason for the observer knowing what illuminant is used. Now that the incandescent electric lamp seems destined to rapidly displace the carbon arc for interior illumination, the distinguishing differences between gas and electric light, viz., the color of the light and appearance of the lamp, will disappear. As to color there is no practical difference between the tungsten lamp and a good incandescent mantle.

The great improvement in efficiency of the tungsten lamp over the carbon lamp has made the most serious inroads into the economical advantage of gas lighting that has yet occurred. This will be partly offset by the recent great improvements in mantles; but even so, if gas is to maintain its advantage in economy to a sufficient extent to offset the advantages in convenience and the sentimental value attached to electric light, it must utilize its economical lead to the utmost limit. This means that illumination by gas must be handled with the most careful and competent illuminating engineering. The comparative efficiency of illuminants is being more discussed than ever on account of the recent improvements in electric lamps, and while gas still holds the advantage in efficiency as a means of producing light under the majority of conditions, the advantage is not so great that it cannot be completely offset by differences in engineering. There is no denying the fact that the tungsten electric lamp, installed on the proper illuminating engineering basis, can beat the average gas installation installed on the old guess-work plan. There is also no denying the fact that, at equal cost, electric light would be invariably chosen.

Broadly speaking, gas will continue to be used as an illuminant just as long as it is materially cheaper than other illuminants, but no longer. If the time ever arrives when electric light is as cheap as gas under all conditions, gas light will disappear like the whale oil lamp. There is no immediate prospect, however, of such an eventuality; nor should it be inferred from this possibility that economy is the only argument to be put forth in precept or practice. On the contrary, the supremacy of electric lighting at the present time is due in no small measure to the failure of gas lighting to put forward its other merits.

In quality of illumination produced gas light is still the peer of any illuminant, and in its artistic possibilities there are but very few cases in which it cannot fully hold its own. Illuminating engineering deals with both of these elements, in fact, insists upon quality to an even greater extent than economy. Let no one delude himself with the notion that illuminating engineering consists alone in mathematical formulas and photometric curves. While a knowledge of the theoretical basis of the subject is essential to the handling of some of the more difficult problems, the technical knowledge required for all ordinary cases can readily be acquired by any one who is reasonably familar with arithmetic. The case is much simplified with gas for the reason that there is practically only one light-source to deal with—the incandescent gas lamp; the principles are exactly the same whether the lamp contains a single mantle or a cluster of mantles.

When simmered down the proposition amounts to this: Illuminating engineering applied to gas light means that each installation

will be put in such a manner as to give gas all the advantages of which it is capable in economy, appearance, and quality of illumination produced. This result cannot be obtained without such a familiarity, with the subject of lighting as may fairly entitle its possessor to be called an illuminating engineer. As to its relation to the gas industry, it is precisely the same relation which efficient service in any business bears to the success of that business. Gas light would undoubtedly continue to be used for some time to come on the old hit-and-miss basis, but the more intelligently it is utilized the longer will it lead a prosperous existence. Between doing a thing in the best possible manner, and in just doing it somehow, there is a wide difference, which generally measures the exact distance between success and failure. If it is admitted that gas lighting could be better done than it generally is at present, then it must also be admitted that it has need of illuminating engineering. To claim that it is not in need of this use of applied science can only be justified for one of two reasons; either gas lighting is now being done perfectly without such aid, or it is too far gone to be resuscitated. You may take either horn of the dilemma you choose.

## There is Nothing New Under the Sun.

In our issue of the 30th ult., there is published an "Item" which recounts the death of a resident of Bloomfield, N. J., who was accidentally asphyxiated while making a surreptitious connection to a main of the Public Service Gas Company. In relation to this we noted: "This is, we believe, the first actually authentic case of a man losing his life while attempting to make a surreptitious gas connection."

Under date of the 1st inst., however, Mr. Paul Doty, Vice-President and General Manager of the St. Paul (Minn.) Gas Light Company, informs us that a like case of import happened in their experience, virtually 2 years ago. He preferred that we should not point the history; but as the matter is of such general interest that we will risk his displeasure by repeating the circumstances, suppressing, however, the name of the deceased and any other matter that could lead to the identification of the major party. The story, as reported at the time (October 20th, 1909) to General Manager Doty, by Mr. B. F. Pelton, the Company's clever Superintendent of Distribution, is as follows:

Mr. Paul Doty, General Manager: Dear Sir—I wish to make special report of a fatal accident at No. —— —— street, last Saturday night, October 2d. Gas service was run for a new house, —— —— street, for —— ——, date of August 24th, 1909. Our foreman reported that at a special request from Mr. —— a service was extended along, outside of the building, coming into the cellar from the side instead of the front as would ordinarily be done.

Last Saturday evening Mr. —— sent word to his wife (they were living at No. —— —— avenue till their new house was ready) that he would go up to —— —— street to work that evening, and would not be home till late. When he did not return Sunday morning Mrs. —— and his brother, —— went to —— street to learn the cause of the delay. They reached there about 7 o'clock and found —— in a hole, dug around the gas service, at the ell where it entered the house. It was found that the short piece entering the house from the ell had been screwed out of the ell, the ell removed and a 1¼ by ¾ by 1¼-inch tee placed on the service, with a ¾ by ¼-inch bushing and a ¼-inch street ell on the end of the tee—the street ell looking down. The hole was deep enough to strike a tunnel extending under the cellar floor and wall from the inside. In attempting to reconnect the original piece of 1¼-inch pipe extending through the wall to the tee instead of the ell, —— failed to make a quick connection and was overcome with the gas. When found in the morning gas was still escaping from the tee. Dr. Nichols, deputy coroner, who lives across the street, was called by ——'s wife and brother, and assisted in removing him from the hole and afterwards had the body removed by an undertaker.

Mr. ——, who lives next door, was present just after the body had been pulled out of the hole. Mr. ——, of —— avenue, also saw the dead man and the gas connection made by him.

——, ——'s employer, was called up and arrived about 9 A.M. He states that —— had been in his employ for 18 years. He had always found him strictly honest, and it was a great shock to him to find that he made the above reported connection. ——, of course, ealized at once what ——'s intention was.

Attached you will find a camera picture of the outside connection

taken by us about noon Sunday. There will probably be no attempt on the part of Mrs. —— or others to attach any blame on us for this case, and I have not attempted to make out any claim or bill against anyone for the gas lost or work in readjusting the piping.

## PROCEEDINGS, SEVENTH ANNUAL CONVENTION, NATIONAL COMMERCIAL GAS ASSOCIATION.

HELD IN DENVER, COL., OCTOBER 24 TO 28, 1911.

### FIRST DAY—MORNING SESSION.

The seventh convention, National Commercial Gas Association, was called to order in the Auditorium, Denver, Col., at 10:19 A.M. of Tuesday, October 24th. Mr. Clare N. Stannard presided. The recording desk was in charge of the Secretary, Mr. Louis Stotz.

The President having expressed the hope and belief that the meeting would be interesting and profitable, asked for the roll call.

On motion, the reading was dispensed with. A motion to accept the minutes as presented was also adopted. The President introduced the Honorable Mr. Speed (Mayor of Denver), who thus

### WELCOMED THE ASSOCIATION.

The Mayor—Mr. Chairman, Ladies and Gentlemen: With one hand I extend you a welcome, with the other I index a warning. Being only an ordinary consumer of gas, for the time holding the position as Mayor of the city, I have been asked to say a word of welcome, which it is a pleasure to speak. We are all glad to have the representative men of a successful organization assembled in our midst, and it is most fitting that a National organization, which trades in light, should meet in a city which has more sunlight than any other, and I want to call your attention to the fact that several of our citizens are trying to gather enough light during the day to last them during the night; who are trying to concentrate and to store the surplus light of the summer for the winter's use, and in the event of their success, all your gas companies will have to dissolve. You are to be congratulated on the wonderful progress made by you in the development of your business. You have ever been alert, investigating and studying for adoption or rejection methods or devices to help you make better gas at lower price. You have been encouraging the use of your product, especially in heating and cooking; however, in counting your assets, having taken an inventory, you must

not forget that a large part of your assets consists in the right to do business in a community and to the use of the streets which belong to the people. Wise companies will divide their dividends with all the stockholders, and those companies that do not will encounter reorganization and new management. Your investment, energy and splendid methods of doing business entitle you to fair returns; but, you must remember, gas and water, either in fact or in stock, do not mix well. [Laughter]. In Denver, as in every other city, you have agitators and professional reformers, most of whom, having made complete failures in their own lines of business, still loudly tell corporations or cities exactly how they should manage theirs. They would confiscate any public utility had they the power; but naturally their following is small, until the utility of itself, by bad service, arbitrary methods and unjust rates, swells their ranks. Most American people believe in fair play and are glad to have a corporation which does not attempt to stack the cards because they have the deal. If our Denver Company is to be taken as an example of how you conduct business generally, I think I can truly say you are the most successful business men existing anywhere on earth. [Applause]. It employs the most polite, courteous and attentive clerks in attendance to be had in the entire West. Every complaint, I care not how trivial, receives immediate attention. It makes you believe you are doing it a favor if you will call on it to point out some defect in the service, and you leave there with the impression that the only purpose the employees have on earth for doing business is to please and serve you. It could not get along at all without your goodwill, but when the bill comes in at the end of the month, you know you are paying too much; the rates are too high and the meter is running too fast; yet the company has been so considerate and courteous and so prompt in untangling intricate knots of the service that you do not feel like saying anything. Some have the courage to enter a complaint, and then they go against the real artist, who tells the complainant that it is grieved more than anyone else at the high bill; that the company is putting forth every effort to reduce the price of the commodity so that the consumers will have smaller bills. Before you leave the poor clerk will tell you they would rather pay part of that bill themselves. The Denver Gas and Electric Company has proven anew the old saying that one can catch more flies with sugar than with salt; it believes that a friendly smile will open the purses, whereas firm, fixed rules only bring curses. Gentlemen, before you go away, investigate our Company's manner and method of doing business, and you may find many things that can be profitably taken home and applied. [Applause]. We extend to you all the hand of hospitality and the freedom of the city; our best wishes from warm hearts that prosperity and happiness may be your companions. Knock at the Mayor's door if there is anything he can do to add to your pleasure during your stay in Denver. [Prolonged applause.]

### Response of the President.

The President, on behalf of the Association thanked Mayor Speer for his splendid words of welcome, and assured him that they were glad to be there.

### Letters of Regret.

The Secretary then read a number of letters of regret from the following:

G. B. Cortelyou, President, Consolidated (N. Y.) Gas Company; Thos. N. McCarter, President, Public Service (N. J.) Gas Company; Lewis Lillie, Treasurer, U. G. I. (Philadelphia, Pa.) Company; Jno. A. Britton, Secretary, Pacific Coast Gas Association; and Mr. H. L. Strange, General Manager, Honolulu (T. H.) Gas Company. Mr. C. B. Babcock (San Francisco), on behalf of Mr. William A. Dare, President of the Pacific Coast Gas Association, extended greetings from the latter, concluding with the hope and belief that the Denver meeting would prove the most successful ever held by the Association.

The Secretary read the following annual

### Report of Board of Directors.

To the Members, National Commercial Gas Association: Your Board desires to express its appreciation of the hearty support which the membership generally, and the Chairmen and members of the various Committees, have given during the year to carry out the plans suggested for increasing the usefulness of the Association. The various trade Journals have also very generously assisted through their columns in booming the Association, by giving publicity to the many plans underway, for which we are deeply indebted.

The results which have been accomplished during the past 10 months are most gratifying from many standpoints. Our membership has increased steadily, and lived up to the pace set during 1910. Company sections have been formed in many localities, and the interest of those sections previously formed has, if anything, increased.

Had the present administration been in office for a full year instead of only 10 months, it is safe to say the record of work accomplished and plans carried out would have made a better showing, although it is felt that much of value has been accomplished during this short term administration.

Meetings of your Board of Directors were held in Boston, New York, Chicago and Denver. Many suggestions have been offered and acted upon, all with the hope of doing something which would benefit our members and the industry generally. These will be mentioned in detail.

With the co-operation of each member in the Association and the support of gas companies and manufacturers of appliances, morally and financially, our Association can now lead the way for improving and advancing conditions throughout the industry, and each year add to its usefulness, not only in educational fields, but along practical lines as well.

The Association is now the recognized leader in commercial gas matters and its popularity is spreading more and more. You, as members, must support it fully and freely to bring about the further results we are seeking.

*The Standard Handbook of Appliances.*—The Committee of 1910, of which Mr. R. E. Sard was Chairman, has accomplished something of benefit, to both the gas companies and the manufacturer of appliances, by securing the adoption of a "Standard Handbook of Gas Appliances." This plan has been most successful, and is now in use by a large proportion of the companies.

Manufacturers are prepared to supply loose sheets of the standard size (punched for binders), these sheets showing the appliances they have to offer. The companies need only purchase the binders and insert the loose sheets, the salesmen and office thus having at all times a complete handbook of all appliances handled by the company. The companies which have not yet adopted this form are urged to do so, as it is an idea they will all appreciate after consideration.

Our "Industrial Fuel Committee" is going a little farther and the Association will publish a "Handbook of Industrial Gas Appliances." This handbook will be as complete as possible, covering every known use for gas as an industrial fuel. It will also be replete with data and tables of information with which every industrial man should be familiar. All industries will be tabulated; also the various appliances which can be adapted to their use, with much information concerning the industries, which will also be found quite useful.

The cost of publishing this book will be rather heavier than the Association can stand at present, and it is, therefore, intended to place the "Industrial Handbook" on sale at cost.

*Gas Salesmanship Course.*—We can justly look upon the course in "Gas Salesmanship" as a crowning triumph for the year's work, and we remain indebted to Mr. Percy S. Young (our Treasurer), for conceiving the idea. The Class now members 725 or nearly one-quarter of the entire membership, certainly showing that our members are fully awake to the necessity of adding to their knowledge and experience. The Course will cover a period of 10 months, one lecture each month being sent to the members, each lecture being accompanied by 10 questions which are to be answered and sent in to be marked and criticised, when they are returned to the students.

Dr. Lee Galloway, a well known authority on business economics and salesmanship, connected with the New York University, has been engaged to conduct the Class, write the lectures and mark the papers. We are fortunate in securing Dr. Galloway's services, as he has taken an exceptional interest in the Course.

A Board of Educational Control, composed of Messrs. George Williams (of H. L. Doherty & Co., New York), Chairman; P. S. Young (Public Service Gas Co.) Newark, N.J.; S. A. Sewall (Denver Gas & Electric Light Co.), Denver, Colo.; J. C. Rushin (Atlanta Gas Light Co.), Atlanta, Ga.; J. B. Myers (the U. G. I. Co.), Philadelphia, Pa.; J. C. D. Clark, Chicago, Ill.; E. L. Callahan (H. M. Byllesby & Co.), Chicago, Ill.; F. E. Cronise (Pacific Gas & Electric Co.), San Francisco, Cal.; R. C. Ware (Boston Consolidated Gas Co.), Boston, Mass., keeps Dr. Galloway in touch with the practical end of the gas industry and thus assures the Course being along lines which appeal particularly to gas men, the endeavor being to make the Course of some practical benefit to gas men and at the same time to cover a broad scope. The cost of the Course being but $5 places within reach

of every member an educational opportunity which he could not duplicate anywhere for five times this sum.

This educational work can be extended along many other lines in our industry, and it is suggested that the officers and directors for 1912 consider carefully how the scope of this educational plan may be broadened.

*The Monthly Bulletin.*—You have all noticed the official publication of our Association, its growth, not only in size, and the general make-up and caliber of articles and information, published from month to month.

The "Bulletin" should be rccognized by us all as the official gas news and medium for securing information. The columns of the "Bulletin" offer an opportunity for expressing the views and experiences of men in every department of the company, and it should be heartily supported. Members, when asked for specific information for its columns, or to answer some inquiry which may come to headquarters, should do their share to answer such inquiries. We cannot take too broadminded a view of our duty to each other, and only by the fullest co-operation can be mutually helpful.

The Question Box particularly should be better patronized. If information is sought through the Question Box, make it your place to help answer the question. If you need advice, this column can help you.

An Employment Bureau was recently established in order to assist the companies needing men and our members in securing positions. Many inquiries have been received and applications referred to the companies advertising. Several positions have been filled from this source.

As the servlce is gratuitous to both the companies and the members, it should be taken advantage of more freely.

*Membership.*—The wonderful growth of our Association is particularly worthy of notice; within 6 years it has grown from the original 12 to nearly 3,000. In December, 1910, at the close of the Boston meeting, we had 2,200 members enrolled. At this date our enrollment is 2,860, and they are still coming in at the New York office and the registration booth here.

[Then follows a tabulation by States, showing the present membership compared with that for 1910. The list is noteworthy in that it displays the membership in foreign countries account, thus: Brazil, 1; Canada, 45; England, 4; Hawaii, 1; Japan, 3; Mexico, 1.—EDS.]

This remarkable increase is due to a strong, unflagging and consistent campaign, conducted from the headquarters of the Association in New York, by Mr. H. D. Frueauff, Chairman of the Membership Committee, and also by the large Committee on Membership and local sections.

On June 1st a Prize Membership Contest was started, to last until September 23d. When the contest closed, over 500 new members had been enrolled. Two trips to this Convention were the prizes offered. Mr. H. O. Loebell (Spokane, Wash.), was the successful contestant from towns of over 50,000 population; Mr. R. Nettles (Tampa, Fla.), from towns under 50,000 population; Mr. George Smith (Jersey City), was also awarded a prize of $125, he having secured 122 new members, the largest number enrolled by one man. Unfortunately, living in a large city, he was unable to secure as favorable percentage as the other successful contestants, but the Committee felt his efforts should be recognized and awarded him a prize.

*Company Sections.*—We now have the following active local sections, all holding monthly meetings for the discussions of papers which are read and local topics and campaigns:

| | | |
|---|---|---|
| Allentown, Pa. | Newark, N. J. | Spokane, Wash. |
| Altoona, Pa. | Omaha, Neb. | St. Louis, Mo. |
| Boston, Mass. | Philadelphia, Pa. | Syracuse, N. Y. |
| Colorado. | Reading, Pa. | South Bend, Ind. |
| Des Moines, Ia. | San Francisco, Cal. | Tampa, Fla. |
| Harrisburg, Pa. | Savannah, Ga. | Wilmington, Del. |
| | Welsbach Company. | |

Those companies which have sections are much pleased to have noted the greater interest taken by the men in their work. This is a fact worth considering very carefully. The men are offered an opportunity for a closer personal relationship between themselves and the heads of the departments. They appreciate this, and the natural result is a more perfect and harmonious organization, producing results which could not otherwise be secured.

It is, therefore, urged upon those companies which have no regular section meetings that such be immediately formed. The Association is prepared to assist in the formation of such sections by paying the duly authorized bills of the section up to 50 cents per member per year in the section; it being understood, of course, that all those in the section must be members of the Association.

It can hardly be expected, that with dues of but $5 a year, the Association could pile up a surplus, especially in view of the many benefits which the members receive—the Monthly "Bulletin," copy of the "Annual Proceedings," the benefit of having plans and handbooks, etc., worked out for the general welfare of the members, and, in addition, the expense which the Association has borne in defraying part of the Convention expenses. With all this, however, we have a balance in the bank at this date of over $3,000, a balance larger by $500 than at our last convention. In addition to this we have collected approximately 80 per cent. of our 1911 dues during the first 10 months of 1911, showing conclusively that the Association is steadily growing financially stronger.

The Tresurer's Report will be read and will give in detail the receipts and expenditures for the year, showing that we are in very good financial condition and the outlook most favorable. It might be well to state that the current assets of the Association are as follows:

| | | |
|---|---|---|
| Cash on hand | | $3,121.22 |
| Outstanding dues | $3,835 (most collectible) | |
| Dues from "Salesman Course" | 1,665 | |
| Petty cash fund | 200 | |
| | | 5,700.00 |
| | | $8,821.22 |

Last year $5,500, the balance showing that our finances are in excellent condition.

The Advertising Committee has a very interesting report which is vital to every member of this Association. This will be read by Mr. John M. Brock, of New York. This report should have some favorable action taken at this meeting, as it covers a plan which has been given careful consideration by the entire Committee.

The various committees appointed for the last year have all worked hard and conscientiously to bring about something of benefit to us all, and the reports of the Chairman are made part of this Report and follow herewith.

*Committev on Constitution and By Laws.*—At the 1910 Annual Convention (Boston, last December), the Association authorized that a Committee be empowered to arrange for securing a Certificate of Incorporation in the name of the National Commercial Gas Association, and Mr. S. H. Benton )New York Consolidated Gas Company), who had previously been working to secure a favorable opinion from a New York judge, reported that he would probably have no trouble in securing papers of incorporation. Unfortunately, on January 24th, Supreme Court Justice Bischof, sitting in special term in New York City, refused to approve the Certificate of Incorporation of the National Commercial Gas Association, saying that, as the avowed purpose of this body was to promote social intercourse among its members, to establish and maintain a spirit of fraternity by the holding of conventions and the friendly exchange of information and ideas, the title "Commercial Gas" did not fit. In fact, he said, "There is no relation whatever between the title and the objects." He claimed that it is manifestly the legislative intent that there should be a harmonious relation between object and title.

Other judges have refused to change this ruling, based really more on a question of ethics than anything else, so that it looks as if, in the State of New York, we would be unable to incorporate at this time.

One of the reasons for incorporating was to relieve the officers and directors from any personal liability, but the New York law reads that, in an incorporated association for non-profit, the officers and directors are liable just the same in case of any cause arising where judgment may be secured against the association. Therefore, your Committee has deemed it wise not to advocate incorporating in New York State, and submit this as its report.

WILLIAM J. CLARK, Chairman.

### REPORT OF COMMERCIAL COMMITTEE.

Your Commercial Committee has, to the best of its ability, assisted a number of gas companies along the following lines. It has worked up, and prepared for 3 companies, a complete gas kitchen campaign, which campaign included data for all necessary folders, letters, newspaper copy, etc. It has planned and furnished the data at "Food Shows," including the souvenirs to be given away for 4 companies. In one instance, it furnished the demonstrator. Also, laid out and furnished a complete new business campaign for 1 company; sub-

mitted data on the compensation of representatives for 1 company; furnished 1 company with what information it could collect on the education of the colored cook, and through its efforts, 1 company has adopted the following for its Company Section:

The Company Section to appoint a Test Committee in each of its districts. This Committee to be made up of one man each from the Accounting, Engineering and New Business Departments; one from the Meter Shop and Distribution Departments, and one from the works. One Committeeman to retire each month, so that in 6 months the Committee is entirely different. This monthly retiring system keeps the Committee from falling in a rut, and it also gives an opportunity to get a great many employees on the Committee in the course of a year.

This Committee is to investigate, test and report back to the company section, the result of its test, etc., on all new apparatus and appliances. This means that they would test new appliances at the works, new ways of running services, new methods of keeping books and test for efficiency new gas consuming appliances.

I think these men can suggest new ideas about the different subjects as they get among them in their daily routine of work, and I am certain that if the Committee makes the proper report, its fellow employees cannot help from being educated therefrom. The result should be remarkable.

The Committee has received a report from Mr. C. M. Benedict, Asst. Sec. and Treas., Charleston (S. C.) Consolidated Railway and Lighting Company, to the effect that it is equipping colored industrial schools with a domestic science kitchen, to be under the supervision of a competent white instructor, who will teach young colored girls the actual cooking on a gas range and how to use gas economically. It proposes to form classes of cooks who are employed by the white families and are the actual cooks. These classes will be taught by the Company's instructor, free. They first gain the consent of the employer to give the cook one hour off during the afternoon, say three times per week. The Company will equip a suitable gas kitchen and invite these cooks to attend the classes. The material which is cooked will be divided among the cooks who attend the lectures. The colored cooks in that section of the South work from morning until 5 P.M., when they are through for the day. It is the Company's intention to hold the classes about 4 P.M. for one hour, and as the colored cooks in that section usually take their supper at their own home, the Company believes that, by giving them the material that is cooked, which means a free supper, they will be able to have large classes.

Your Committee has also furnished the lantern slides for illustrated lectures on industrial fuel, to two companies. One company reports it was very successful with the lectures and have a number of sales as the result of the same.

Your Committee has also taken up the question of meeting the electric competition on ornamental street lighting; but, owing to the lack of unobtainable data, with reference to ornamental gas street lighting, its cost, etc., because of the very small number of gas installations, made it practically impossible to give, at this time, any data, or cost that will be of any value. Your Committee believes that, by the time of the next annual Convention, it should be able to report considerable progress, for there is no question but that it is time gas companies should get their share of the ornamental gas street lighting business.

Your Committee has found that the word "Commercial Committee" is really too broad a subject for one Committee to handle, unless its powers were more clearly defined. We firmly believe that the Association should appoint either the Secretary or some good commercial man to act as Chairman of a Commercial Committee. This Chairman to appoint the following Committees:

The inspection of gas consumers' appliances; gas signs; factory lighting; showrooms; new business meetings; industrial appliances; advertising in all its branches; furnishing answers to "Bulletin" questions; salesmanship; gas appliance connections; gas ranges; gas water heaters; resident lighting; straight gas and combination fixtures; store lighting; ornamental street lighting; gas engines; demonstrating; heaters and radiators; hotel cooking; gas kitchens; gas irons; laundry appliances; tests; distance lighting: china kilns; church lighting; electric progress; special campaigns, and many more, we suppose, could be added. The duties of these various committees would be to furnish data and information, that would be of value to all companies, through the Monthly "Bulletin," on their particular subjects, and at the end of the year to have completed a printed catechism on the different appliances which come under the jurisdiction of the Committee.

The Industrial Committee should be divided up under the sub-heads such as were published showing gas in its 800 uses.

Have a chairman each for the chemical laboratories, the automobile and bicycle shops, bakers and confectioners, barrel manufacturers, blacksmiths, can, cloth, implement manufacturers, foundries, etc. They should also look up and be able to furnish companies with the names and addresses of men who make a specialty of campaigning on different appliances.

The "Special Campaign Committee" should keep the "Bulletin" alive with data pertaining to campaigns, such as the Detroit City Gas Company has worked in the past. A number of other companies are now working the same plan.

The "New Business Meeting Committee" should furnish data pertaining to the training of old as well as new men.

The "Electric Progress Committee" should report monthly the progress that is being made by the electric industry. By breaking up a few Committees into the many, we should be able to get much better work, and a man can accomplish greater results by specializing on the one appliance without near the trouble as it has been in the past. We also believe that the scheme will enable the Association to get a greater number of workers on Committees.

Yours very truly, GEO. W. THOMSON, Chairman.

REPORT OF COMMITTEE ON ACCOUNTING AND RELATIONS WITH CUSTOMER.

The Accounting Committee met shortly after the annual meeting, December, 1910, and formulated plans for the year 1911, which have since been carried out. These were to have a "Queston Box" in addition to the articles contributed to this department by the members. The plan seems to have met with quite a little amount of success, and, by personal solicitation of the Committee's members, the questions have been answered by the men in the ranks who were best qualified to do so. The Chairman suggests, as a plan for making this department as interesting as possible in the future, that every effort be made to prove to our members who are in the accounting end of the gas business what a great aid they can be to the New Business Department in many ways. W. H. PETTES, Chairman.

REPORT OF THE COMMITTEE ON RELATIONS WITH MANUFACTURERSS.

The work of the "Committee on Relations with Manufacturers," not being clearly defined as is the work of other committees, it was necessary for it to figure out ways and means for making itself valuable to the Association. It was felt that no more valuable work could be done than to push the "Standard Handbook Plan," which was started by last year's Committee, and which has been so often described in the "Bulletin" and in circulars that further explanation here is unnecessary. Although at first there were some predictions that the plan would be a failure, probably due to the fact that it was not thoroughly understood, yet at the present time your Committee is pleased to report that the plan seems an unqualified success, and more than 150 companies have reported to the Secretary that they are making use of the plan. Over 60 manufacturers are prepared to furnish standard sized leaves for the "Handbook."

It was suggested by one member of the Committee that certain tables and data might be printed on standard size sheets to fit the "Handbook," and thus be readily accessible to solicitors making use of it. Work was started on the compilation of these sheets, but when the Educational Committee was appointed it was felt that the work would properly come under its jurisdiction, and this plan was left to them to carry out, if they thought it advisable to do so.

The Committee wishes to thank the manufacturers and gas companies who have co-operated in the introduction of the "Standard Handbook" plan. It necessarily entailed some expense to change catalogues and solicitors' books to the standard size, but when the change is once made it should cost no more and will be a great convenience to all.

The Secretary has been of great assistance to the Committee, and given his co-operation in advertising the "Standard Handbook" plan through the "Bulletin" and in giving out information in regard to the plan. Respectfully submitted,

RUSSELL E. SARD, Chairman.
C. W. HARE, Co-Chairmon.

REPORR OF THE EXHIBITION COMMITTEE.

A meeting of the Exhibition Committee was called early in January, and at that time the general plan for the exhibition was brought

(*Continued on page* 314.)

THE AMERICAN GAS LIGHT JOURNAL

Entered at the Post Office, New York City, as Second-Class Matter.

Published weekly at 42 Pine Street, New York City.

Telephone Call, John, 2996. Cable, Am-Gas.

A. M. CALLENDER & CO., - - Proprietors.

THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER, } Editors.
H. THURSTON OWENS, - Associate.

CHARLES H. WADELTON, Manager.

Agents—American News Co., 11 Park Place, New York City.
Lemcke & Buechner, Berlin, Germany.
Aug. Siegle, 30 Lime Street, London, England.

TERMS OF SUBSCRIPTION.

United States, Cuba and Mexico, $3 per year. Canada, $4 per year. All other countries, $5 per year.
Single Copies, 10 Cents.

NOTICE TO ADVERTISERS.

New Advertisements and changes of copy therefor should be in hand Wednesday noon of week prior to date of issue.

NEW YORK, MONDAY, NOVEMBER 13, 1911.

## BRIEFLY TOLD.

THE OAKLAND MEETING, PACIFIC COAST GAS ASSOCIATION.—As we unfortunately (and for many reasons, the main one, of course, being the sudden and severe indisposition of the correspondent who had charge of the matter for us) had to report some time ago, our account of the transactings at the 19th Annual (or Oakland) Meeting of the Pacific Coast Gas Association was to all intent nil. So to make some amend therefor, and wishing to report the details of the convention, which was a positive success from every point of view, we ventured to ask, from one of the most prominent men in the business on the Coast, a narrative of that which was done. Here it is:

Dear JOURNAL: The meeting of the Pacific Coast Gas Association this year was one of considerable interest in many ways. It was the Nineteenth Annual Meeting, the first one ever held in Oakland, and was noted for several things, prominent in which were the active interest shown by all the members, the free discussion of the papers, the paper[1] on "Rates for Gas Service," by Prof. C. L. Cory, of the University of California, and the raising of a fund, by the members of the Association individually, for the establishment, at the University of California, of a chair of gas engineering, so that students in the engineering department of the University can secure a theoretical and practical knowledge of gas manufacture and distribution. For a great many years, Messrs. John A. Britton, E. C. Jones and L. P. Lowe have constituted a Committee on Gas Engineering Degree, in the Pacific Coast Gas Association, and they have been endeavoring to find ways and means whereby such a thing could be brought to pass. In a broad sense, the financial status of the Association, as originally outlined, has not been, nor was it intended to have been, such as to make it possible for the Association to finance and support such an idea: for, from the information I have in the premises, our Association differs materially from all other kindred Associations, in that the annual dues of $5 paid by the members serves all the expense incurred by them to secure the privileges of membership in respect of the meetings, and that the Association itself not only gives them the privilege of attending the meetings, to listen to the reading of the papers, and to participate in the discussions thereon, but also provides them with an elaborate banquet, together with one day's outing, which is always to some point of local interest, and includes the luncheon given on that day. In addition to this, they are supplied with bound volumes containing the "Proceedings," so it is easy to understand that each member certainly gets at least full value of his expenditure on dues' account. So that, from the outing point of view, the brunt of the entertainment is usually borne by the companies in the locality chosen for the meeting. It early occurred to the Committee in charge of the establishing of a degree in gas engineering that it might be the general wish of the members of the Association to establish, at the State University, a Chair of Gas Engineering, and that as individuals they might desire to support such a Chair. This sentiment crystallized evidently just prior to the recent meeting, for, after the opening of the proceedings in Oakland this year, following the completion of the routine business of the first day's session, Secretary Britton, in recalling the status of the matter presented to the members, suggested that individual contributions to be paid yearly for the next 5 years be made on individual account. The enthusiasm which greeted the idea was unusual; in fact in a minor way, of course, it reminded your correspondent of the meeting that happened about a year ago in the San Francisco Merchants' Exchange, when the sum of four millions of dollars, for the Panama-Pacific International Exhibition in San Francisco was raised in less than 2 hours. In order to give everyone an opportunity to share in the work, it was deemed advisable to limit any individual or firm's contribution to $100. Nearly every one contributed something, especial recognition being made of the younger members who vied with one another for the privilege of subscribing the minimum of $5. It was estimated that between $4,000 and $5,000 would be required for the next 4 or 5 years to establish and maintain the Chair, after which time it will be self-supporting in the like manner to that of all other Chairs at the University. The entire amount could easily have been raised at the meeting in the first quarter hour, but it was suggested that as probably there were a number of members unable to attend this meeting who might be desirous of subscribing to the fund, a letter be addressed to each member of the Association explaining the matter, thus giving all an opportunity of subscribing, should they so desire. The entire amount has been raised. It will be payable in annual payments, on the 1st of July of each year for 5 years, and the Chair will be established in August, 1912. As you printed in the JOURNAL a list of the papers it is, therefore, not necessary that I should here repeat them. The selection of San Diego as the place of meeting in 1912 was a popular choice, in that the General Manager, Mr. H. H. Jones, and the Superintendent, Mr. R. L. Clark, of the San Diego Consolidated Gas Company, which is controlled by the H. M. Byllesby Company, are both very popular with the brethern of the Association, which means we will be given another example of the opened-hearted hospitality that is a feature of life in Southern California. The officers elected for next year are all well known and popular gas men. President William Baurhyte is Vice-President of the Los Angeles Gas and Electric Corporation, and has been active in the Association for a number of years. Vice-President, Henry E. Adams, is the General Manager, at Stockton, for the Western States Gas and Electric Company, another of the H. M. Byllesby Company's plants. He is one of the charter members of the Association, and succeeded his father at Stockton on the lamented occasion of his father's death, about 20 years ago, and the latter was the first Superintendent of the original Stockton Gas Company. Assistant Secretary Harry Bostwick, is the Senior Mr. Britton's private Secretary, and as you know he has for many years faithfully performed the duties of Assistant Secretary. In fact, he is the really active man in that office. Of the Board of Directors, Mr. H. C. Keyes, is the Manager of the Sacramento Natural Gas Company, and one of the old-time gas men of the State, Mr. H. H. Jones, of San Diego, has only been on the Coast a comparatively short time, during which time he has made many friends, and clearly shown that he possesses a thorough knowledge of the business. Mr. C. S. Vance is Superintendent of Operation and Maintenance, for the Los Angeles Gas and Electric Corporation, and he surely is a prince amongst good fellows. Mr. C. F. Stamps, Jr., familiarly known as "Fox," who is the Coast Agent for the Sprague meter, is one of those irrepressibles who try their utmost toward keeping the Association from becoming too serious a body and being "throttled' with its importance. Mr. George C. Holberton is the General Manager of the San Francisco Gas and Electric Company. Although an electrical man by birth, education, training and environment, he is still sufficiently broad-minded to see the advantage of the gas and electric man going along hand-in-hand. Since becoming General Manager of the San Francisco Gas and Electric Company, he has devoted a good deal of time to gas questions, and I would not be surprised to see him some day become altogether converted. He is a fine, clean, capable and popular member. Mr. R. J. Thompson, as the Pacific Coast Agent for the Welsbach Com-

1. See JOURNAL, *ante*, pp. 252-53 and 259-263, Oct. 16 and 24.

pany, is, of course, well-known to all the members of the Association, and is as well liked as he is well-known. Mr. S. Waldo Coleman, who is the General Manager of the Coast Counties Light and Power Company, which supplies Santa Cruz, Watsonville, Hollister and Gilroy, is one of the young men in the Association and in the business who is rapidly coming to the front. Professor C. L. Cory's paper on "Rates for Gas Service," is really a text book on the subject, as far as California conditions are concerned, and we hold it is one of the most valuable papers ever given to any gas association. All of the papers were of a particularly valuable nature, in that they were all of direct interest to every member and were thoroughly practical, not dealing in generalities and theories which regrettable fact is seemingly so common in the general run of papers read before our gas Associations. As you have copies of all the papers by this time it is not necessary for me to dwell on them, other than to say that the discussion on them was active and general, showing that these had been listened to attentively and with understanding. In connection with the meeting a small display of appliances and fixtures was made by most of the firms on the Coast dealing in such articles. These included the Trenkamp, the Eclipse, the Reliable, and the Acorn Stove Companies; the Welsbach, and the General Gas Light Companies; the Connelly Iron Sponge and Governor, the H. Mueller Mfg. Co., and the S. R. Dresser Manufacturing Companies; the Lindsay Light Co., and the Equitable, Standard, the Laporte, and the Sprague Meter Companies. Although the exhibit was on a small scale it was quite complete, and very interesting, in that it showed many new models and articles of general avail. The banquet, which was held at the Key Route Inn, from the point of view of the epicure, was one of the best ever served. The evening was particularly enjoyable in that the serious talks usually given by the professional amateur spellbinders were dispensed with, and in their stead an impromptu farce was given by some of the members, the playbill noting it as "Rate Fixing in the Town of Squeedunk." The afternoon of the evening of the banquet, Mr. R. L. Van der Naillen, General Manager of the Oro Water, Light and Power Company, approached the writer and two or three others with a suggestion that something be done toward livening up the banquet. He hinted that a burlesque on Prof. Cory's paper which had made such an impression on the members, would be the most timely. Securing permission of the "powers that were," we immediately began racking our brains for ideas—Von der Naillen is responsible for 95 per cent. of the fun. We solicited the assistance of the Manager of a Theatrical Stock Company in Oakland, for the necessary wigs, beards, grease paint and costumes, and spent all of our available time in writing a farce for the edification of our fellow members. The scene was the regular monthly meeting of the Council of the town of Squeedunk. The cast of characters was as follows:

*Mayor.*—R. L. Van der Naillen.
*Town Clerk.*—? ? .
*City Attorney.*—W. H. Kline.
*Councilmen.*—Stanley V. Walton, Roy Cantrell, Sherwood Grover and C. F. Stamps, Jr.
*Expert for the City.*—Wallace H. Foster.
*Representing the Gas Company.*—John A. Britton.

The usual routine business of the Council of a small town was taken up and disposed of in a humorous way. Of course, the event of the evening was the fixing of rates. Mr. Britton made an impassionate appeal to the Council to consider the propriety of maintaining the present rate; and I must say that he outdid himself in his effort. All of his statements regarding quality and cost were refuted by the expert for the city, and the confusion of terms was wonderful to listen to. The star of the evening was Van der Naillen, as the Mayor. He has a Swiss-Italian accent that is a marvel, and we all feel he missed his true vocation by becoming a gas manager, as fame and fortune certainly await a man of his talent on the professional stage. It was all impromptu and created so much fun that the banquet adjourned immediately after the adjournment of the Council. The outing was given by the Pacific Gas and Electric Company, in Oakland, and consisted of a trolley trip through Alameda County. In the morning the Richmond plant of the Standard Oil Company was visited, and proved exceedingly interesting to most of the members, who were accompanied on this outing, as at all other outings in the past, by their wives, mothers, sisters, daughters and sweethearts. Luncheon was set in Piedmont Park, after which the famous art gallery of Mr. F. E. Havens was visited. The trolley trip was then resumed, the route being through the East end of Alameda County, terminating at the Key Route Inn, where the members left one another until next year. The trip was exceedingly enjoyable in every way, the only marring feature being a cold wind that blew from the North most of the afternoon; but, to borrow the French trinity-of-brotherhood expression, "Liberty, fraternity, equality" ruled fervently, wherefore atmospheric conditions were only secondary.—V.

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HEALTHY DECAY.—The paper read by Mr. E. Leavenworth Elliott, at the Denver meeting of the National Commercial Gas Association, has, for its title, "Illuminating Engineering and Its Application to the Gas Industry," and it is reprinted in this issue of the JOURNAL. Mr. Elliott is, of course, an electrician—although his specialty is illuminating engineering, whatever that may be. Further, he would assist the gas industry to "escape from hastening ills a prey." Praiseworthy, of course; but, on the other hand it would seem the part of prudence, when one is attempting to break up the lumps in a "new engineering" field that the harrow be not used too often. The last "Bulletin" issued by the Census Bureau, Department of Commerce and Labor, which has to do with "Gas, Illuminating and Heating," will not be ready for release until Wednesday next. Nevertheless, it may not be altogether unpardonable if we remark that, in the concrete, it will show (as between the 5-year period, 1904–1909) this: Gas produced (1909) 150,835,793,000 cubic feet; in 1904,112,549,979,000 cubic feet. This shows a percentage gain equal to 34. The value of the products was: $166,814,000, in 1909; $125,145,000, in 1904. And all this gain is recorded, notwithstanding Mr. Elliot's declaration that "To the outside observer it appears that there is no [other] part of the general field of illumination which is in such urgent need of illuminating engineering as gas lighting." Thus is the point on which the thread of Mr. Elliot's story hangs, "Give illuminating engineering a chance to grow old!" Healthy decay, of a verity.

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CURRENT MENTION—

IT is with regret and satisfaction that we chronicle the retirement from active connection with the gas industry of Mr. Walter A. Allen, since 1894 the accomplished and painstaking Superintendent of the New York Mutual Gas Light Company. Some months ago Mr. Allen had a reminder from Nature that he could not, as before, withstand and rally from illness as of yore. Having revived after quite a siege, balanced thought led him to the sound conclusion that business activity was not all the world held, whereupon he handed in his resignation, which, after long consideration, he remaining unyielding in his determination, was regretfully accepted by his Company. Mr. Allen became the engineering head of the Mutual Company on the death of his brother (the brilliant, lovable H. F. Allen), prior to which time he had been in engineering charge of the plant at Albany, N. Y. Mr. Allen proposes to retain his residence in New York, and it is a certainty that all will join with us in wishing him as pleasing and harmonious a vacation time as his business time was successful and laudatory.

WITH a lively sense of gratification we note that Mr. Louis N. Rancke has assumed the duties of General Manager of the Vulcan Fire Brick Company, the modern plant of which is excellently situated at Wilmont, Va., on the Rappahannock River, the headquarters of the corporation being located in the premises, No. 218 East Lexington street, Baltimore, Md. Mr. Rancke was for years the capable and well-known working head of the Baltimore Retort and Fire Brick Company, and more recently was on the staff of the Laclede-Christy Clay Products Company, of St. Louis. His new field is a large one, and that it will be made larger through his well-directed efforts does not admit of a doubt.

THE Camden (N. J.) Iron Works is constructing a storage holder for the Lewiston (Me.) Gas Light Company, up to retaining 300,000 cubic feet. We understand that it is to rest in a reinforced concrete tank, and that the erection work is under Mr. J. B. Beaston for the Camden contractors.

THE Housatonic Power Company, according to advices by way of Hartford, Conn., has acquired control of the capital stock of the Waterbury (Conn.) Gas Light Company.

THE Barre (Vt.) Acetylene Gas Company (it had enough on hand, Thursday fortnight, to last it for 4 weeks), proposes to go out of business when the carbide on hand is exhausted. So said Mr. G. Warren Cox, Secretary of the Company, to a news reporter some days ago. He further said that he personally had lost all in the venture that he proposed to lose.

MR. PREVOST HUBBARD, Chief of the Division of Roads and Pavements of the Institute of Industrial Research, has been appointed Lecturer in Engineering Chemistry, Columbia University. He will direct the courses in "Bituminous Materials," to be given in correlation with the graduate courses in "Highway Engineering."

(*Continued from page* 311.)

out. Since then meetings have been called as often as necessary to keep the members informed with regard to the work accomplished. The Auditorium has been obtained for the exhibition and convention, the floor plan laid out, and the prices fixed for the space. On account of the convention coming immediately after the electric show, it was decided to use their layout of booths, as far as possible, thereby saving the expense of having booths constructed and installed.

Arrangements have been made with the Welsbach Company, the General Gas Light Company, and the Sun Vapor Company for elaborately lighting Champa and Curtis streets, the principal thoroughfares to the Auditorium, with ornamental lampposts supporting gas arcs.

The Welsbach Company and General Gas Light Company, heartily co-operating in the lighting of the interior of the Auditorium, have designed a very complete and attractive lighting scheme which no doubt will prove one of the main attractions of the show.

A prospectus has been sent to a very complete list of manufacturers of gas appliances, together with a letter calling attention to the advantages of the exhibition. Those letters were followed up by others, with the result that practically all the space has been sold. A blueprint has been sent to each exhibitor, showing the size, location and space assigned him; also, a letter asking that he fill out, on the blueprint the location and number of gas, electric and water connections, and also the maximum gas consumption.

The Committee is very well pleased with the progress to date, and has every reason to believe that the coming Exhibition will be very successful.

W. J. Baker, Chairman.

### Report of Paper Committee.

Then follows the report of the Committee on Papers, which is virtually alike that which accompanied the various notices preliminary to the meeting and therefore printed in the Journal.

### Report of the Illumination Committee.

Louis Stotz, Esq., Secretary, National Commercial Gas Association, N. Y. City: I acknowledge receipt of your favor of August 25th, wherein you request of me a report of the Illumination Committee, which should be embodied in the annual report of the Board of Directors, which will be presented at the October convention to be held in Denver.

As you doubtless know, I was appointed Chairman of the Illumination Committee 3 or 4 months ago or at the time Mr. Normon Macbeth resigned, and inasmuch as I am not familiar with what transpired during Mr. Macbeth's incumbency, I find myself unable to present much of a report. In the article entitled "Forward" appearing in the July issue of the "Bulletin," I attempted to set forth my ideas in a general way as to how the Committee could serve the Association.

If I may be permitted to treat with the future rather than the past, I would like to convey to the Association my strongest recommendations that the subject of light and illumination be considered in the broadminded manner which the breadth of the subject justifies. While the National Commercial Gas Association is interested primarily in the commercial aspects, yet sight should not be lost of the fact that it is only through the proper understanding and treatment of the subject in its entirety that assures of its grertest ultimate success. While we are naturally interested in such obviously important details as efficiency of radiators and accessories, which permit of economic maintenance, yet we are more especially concerned in evolving conditions which make it possible for the eye and brain to perform their functions with the least expenditure of energy and to design equipment and installations which will be in thorough harmony with their environments, employing efficient illuminants and accessories which permit of economic maintenance. I feel confident that if the National Commercial Gas Association will lend support to such appreciation it will be possible to eliminate much talk, ideas and methods associated with the "cheaper than" idea that has prevailed in some gas lighting circles.

Movement in the "lighting world" to-day is not so much a matter of more light, but better light. It is well within the ability of those associated with the gas industry to conceive and create illuminants, accessories and methods of application which will be in keeping with the more advanced thought in the use of light, with realization of higher development and proper adaptations, a most desirable impetus will have been lent the commercial cause, for not only will the science and art have been raised to higher planes, but returns from such advancements in dollars and cents would be most acceptable. It is the intention of your Committee to work along these lines and we sincerely trust that we may have the support of the Association as a whole.

A. J. Marshall, Chairman.

### Report of the Industrial Committee.

The work done by the Industrial Committee during the past year in the main has been an effort to compile a text-book for the use of industrial men and for advertising purposes.

As a text-book, we have accumulated data from engineering sources that we believe will be of value to the industrial men from a technical standpoint, and we have coupled this with practical information. The book is going to be divided into four parts. The amount of material collected has made it necessary to subdivide to the extent that it is going to be a very large book, and we have thought best, if we have the approval of the Association, to publish simply the first part within the next 2 weeks. The first part will contain a summary of what will be contained in Parts II., III. and IV., and the first edition will be used by solicitors only.

I want to acknowledge the very valuable assistance of Mr. Henry Loebell, of Shokane, and Mr. A. A. Treadway, of Detroit, as doing the main part of the work for our Committee.

We want to recommend that this book, in its various parts, be used for advertising purposes. It will be so arranged that we will have booklets for factory purposes, laundries, bakers, etc., making it possible to publish at small expense a large number of copies to be sent directly to engineers as well as to mechanics.

The Committee would like to recommend that this work be continued during the coming year, and that Mr. Loebell and Mr. Treadway at least be on the Committee for the coming year, so that the work may be finished with a degree of promptness.

An investigation, started by Mr. O. H. Fogg, of New Xork city, has not as yet been compleled, but we recommend that the investigation be continued for another year, making comparative figures of the cost of producer gas and artificial gas for industrial uses. Mr. Fogg has spent a good deal of time on this subject, and data already obtained should be of value for use in the "Bulletin" in the near future.

The foregoing is submitted as a report of your Board of Directors for the year 1911, and it is thought shows that our Association is now a strongly established factor in the industry for advancing the interests of all in the business and relinquishes to the incoming Officers the direction of its affairs with the hope that during the coming year we may add to our strength and usefulness.

Clare N. Stannard, President.
Loris Stotz, Secretary.

On motion of Mr. F. W. Frueauff the Report of the Board was accepted, and referred to the incoming administration.

(To be Continued.)

## Operation of Verticals in Providence.

[Prepared for the Sixth Meeting, American Gas Institute, by Mr. Carroll Miller, Providence, R. I.]

As the new coal gas plant of the Providence Gas Company was described in a paper read last February before the New England Association of Gas Engineers I will, therefore, repeat here only the portions of that description necessary to this paper, which deals with the conditions in and the operation of the settings.

The retort installation is of the Dessau type, and has been in operation nearly a year. Two stacks, each containing 6 benches of 10 retorts, have been in use for that time, the the third stack not having been charged. The retort is 13 feet 2 inches long, 22½ inches by 9 inches at top, and 27 inches by 14 inches at bottom, and is 3 inches thick at the top and increases to 4 inches at the bottom. The retorts are in 2 rows of 5 each, the producer being at the side, lengthwise of the bench. The producer gas and air enter the setting at 6 places, 4 between the retorts and 1 at either end of the bench.

There is 1 producer for each bench, the size of the grate being 3 feet 4 inches by 4 feet. The total depth from the grate bars to the charging door is 18 feet, but, as the producer gas is taken off at a point about 3 feet above the grate, that figure represents the active depth, when the fire is clean, the remainder of the height being available for storing coke.

The combustion takes place at the bottom of the retorts, the products making 4 horizontal passes, alternately away from and towards the producer, leaving at the top of the setting, down through the recuperators, which supplies steam to the fire, thence to the main flue.

During the first few months we had great difficulty in heeping the retorts hot enough at the tops without getting the temperature too high at the bottoms, where it would exceed 2,500° F., and yet not hot enough at the tops to carbonize the charges. We did not then determine the top temperature, but it probably was not higher than 1,500°

F., a difference of 1,000°. By making some changes, the difference was reduced to about 500° and the highest temperature to 2,300°. These changes led up to the below described tests, which were planned and conducted by Mr. E. R. Hamilton, Chemist of the works. I will only give the results of the second series of tests as the first were not complete, due to some of the junctions getting out of order and breaking. The figures obtained in the first substantially check with those of the second series.

A retort was selected in the row farthest removed from the producer, on account of its being more available for placing the thermo-couples. Temperatures were taken at 4 points outside the retorts and at corresponding heights on the outside and center of the charge (see Fig. 1).

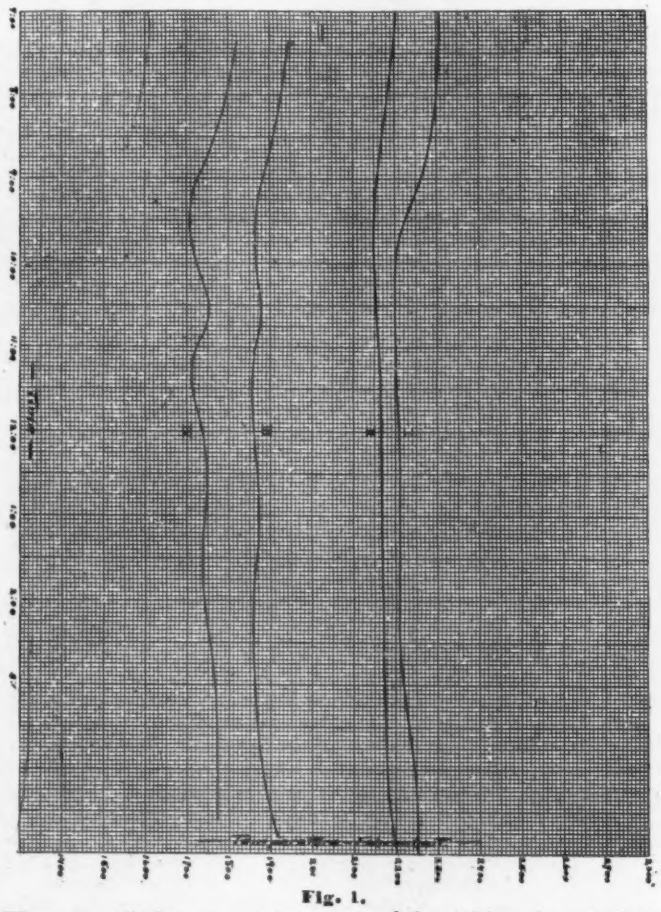


Fig. 1.

A Wanner radiation pyrometer was used for taking the outside temperatures at the lower passes, and base metal thermo-couples at the other points. Temperatures were also taken at the top of the charge, the thermo-couple entering about 3 inches into the coal. Two 1¼-inch pipes were inserted into the retort through the top lid, one pipe resting against the sidewall and the other held in position in the center of the charge. Two 13 feet and two 8 feet, asbestos-covered junctions were used; one of each was placed in a ¼-inch pipe and this pipe inserted into the 1¼-inch. The smaller pipes, containing the junctions, were moved up and down to get the temperatures at each two corresponding points.

The temperatures were plotted into curves. The outside temperatures are shown in Fig. 2, the inside in Fig. 3. The curve numbers correspond to the position numbers in Fig. 1.

Curves 6, 8, 10 and 12 were not started until 10 A.M., because no readings were taken in those positions before that time, as we desired to take readings during the beginning of the charge, at 5-minute intervals, in order to show the sudden variations in temperature. It was impractical to move the couples every 5 minutes and the readings at 15-minute intervals, which were taken after 10, would not have shown these changes. Before 10, doubtless, these curves would approximate 5, 7, 9 and 11 respectively. Curves 9 and 10 stop at 1:30 P.M. because the couple broke. The retort had been scurfed just previous to the test. Bench No. 2, Retort No. 7.—Date of test, August 11, 1911: Coal charged, 1,100 pounds; moisture, 1.05 per cent.; volatile matter, 33.23 per cent.; ashes cleaned out of fire, 8 A.M.: fire raked up, 11 A.M., 2:30 P.M.; 4:30 P.M.

Some analysis of coke taken from various parts of the retort lead us to believe that the coal is thoroughly carbonized when it attains a temperature of about 1,500° F. However, in considering the equal heating of the charge, this figure need not be considered. Curves 5, 6, 7 and 8 would indicate that the temperature is too low at the bottom; that the coal at position 7 is carbonized about 15 minutes before that at 8 and an hour before 6. We raised the bottom temperature slightly and obtained better results; yet some portions of the charge were heated more than others, thus causing a waste of fuel.

The curves would indicate that a thinner charge would be desirable. Although the temperature outside the retort at the bottom is higher than at any other point, the temperature at the center remained far below the upper points. This may be accounted for by radiation from the lower mouthpiece as well as by the thickness of the retort and charge.

The object of this paper is to describe the operation of our settings and, therefore, I will not here go further into the data at hand. However, it seems from these tests there may be calculated the heat trans-

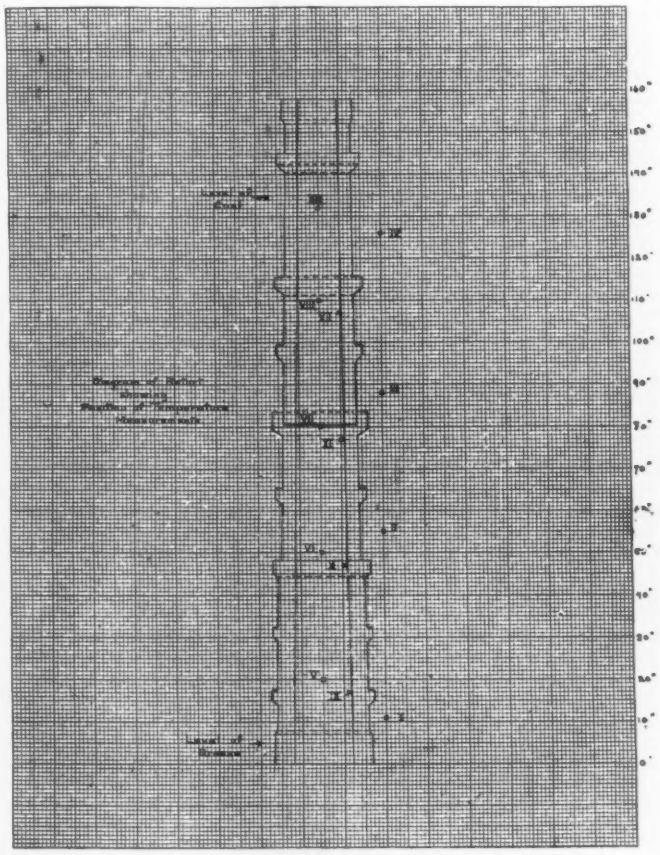


Fig. 2.

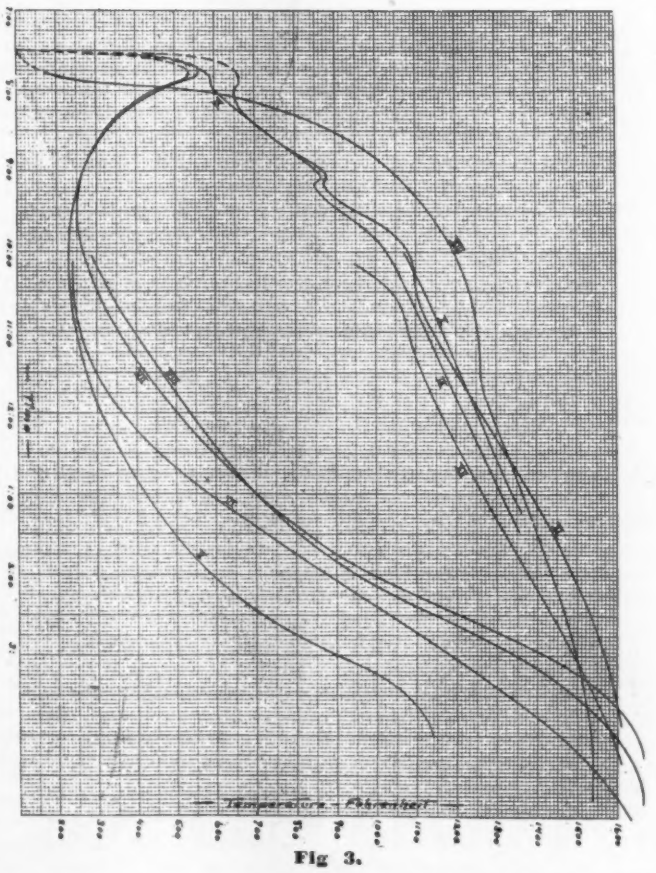


Fig 3.

mitted through the retort wall and body of coal for the various thicknesses and corresponding temperatures, which might be of some value in designing and applying heat to a retort setting. In Table I are the results of operations for each month during this year to July, 120 retorts being worked. From time-to-time we have changed our methods of operation, which accounts, to a great extent, for the variations

in the results. Explanation of the various items in Table I and our methods are given below. Mr. T. H. Hintze, Superintendent of Works, has worked out much of the data given in this paper.

Carbon forms in the retorts very rapidly, particularly in the lower portions. We have tried various methods to reduce the time of scurfing, but the average time taken has not fallen much below 40 hours, each retort being scurfed every 20 days, thus causing a loss of capacity, from retorts being off, of something over 8 per cent. In addition to this, the amount of coal charged per retort decreases as the carbon increases. The average amount of carbon removed from a retort after being 20 days in service is 44 pounds, or 0.628 cubic foot, equivalent in volume to about 33 pounds of coal, an average loss of 16.5 pounds per charge, or about 1.6 per cent. Some recent experiments that we have made would indicate that the scurfing time may be reduced to a few hours. The pressure of gas at the bottom of the retort is from 10 to 12 inches of water during the first period of the charge, and 3 to 4 inches during the last few hours. Sometimes, the charge hangs in the retort, which seems to be generally due to the extreme bottom of retort being too cold. We have made some experiments to determine the differences between the illuminating powers of the flat flame and argands. The Sugg-D averages about 3-candle power higher and the Metropolitan No. 2 from 6 to 7, when tested with gas of from 12 to 14-candle power in the flat flame.

Coal is fed into the storage bins with a belt conveyor, the chute of which constantly travels the full length of the retort house. This chute passes over a little hopper made of such size that it collects about ¼ of 1 per cent. of the coal going into the bins. These samples

TABLE I.

| | January. | February. | March. | April. | May. | June. | July. |
|---|---|---|---|---|---|---|---|
| Time of charge | 15 days, 10 hrs. | 15 days, 9 hrs. | 10 hrs. | 10 hrs. | 10 hrs. | 24 days. 10 hrs. | 12 days. 11 hrs. |
| | 16 days, 9 hrs. | 13 days 10 hrs. | ..... | ..... | ..... | 6 days. 11 hrs. | 19 days. 10 hrs. |
| Number retorts charged | 8,996 | 8,115 | 8,484 | 8,192 | 8,329 | 7,724 | 8,173 |
| Average weight charge | 962 lbs. | 957 lbs. | 990 lbs. | 980 | 1,022 | 1,032 | 979 |
| Gas made, M's cubic feet | 42,775 | 37,739 | 41,608 | 39,522 | 40,910 | 38,132 | 42,595 |
| Gas per pound coal, cubic feet | 4.93 | 4.85 | 5.00 | 4.91 | 4.81 | 4.78 | 5.32 |
| Candle power (flat flame, Bray No. 7) | 13.00 | 12.78 | 12.70 | 13.40 | 14.40 | 14.12 | 12.05 |
| Candle feet | 64.10 | 61.98 | 63.50 | 65.30 | 69.30 | 67.49 | 64.10 |
| Calorific power | 615 | 637 | 625 | 605 | 606 | 627 | 637 |
| Bench fuel per 100 pounds coal | 19.64 | 19.11 | 18.87 | 18.78 | 18.62 | 19.46 | 20.34 |
| *Gas per ton coal, cubic feet | 11,043 | 10,864 | 11,200 | 10,998 | 10,774 | 10,707 | 11,917 |
| *Tar per ton coal, gallons | 13.50 | 15.80 | 16.60 | 15.94 | 17.30 | 17.74 | 12.30 |
| *Ammonia per ton coal, pounds | 5.29 | 6.27 | 6.30 | 7.05 | 6.462 | 7.035 | 6.825 |
| Coke made, per cent. coal | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| Coal per man per day, tons | 12.477 | 12.353 | 12.006 | 11.957 | 12.268 | 11.9 | 11.361 |

*Ton = 2,240 pounds.

are collected weekly and crushed, quartered and analyzed in the usual way. The coke is sampled and analyzed weekly. The take-off pipes from the retorts are cleaned every 2 days.

The hydraulic mains are equipped with pans, one under each dip-pipe. These pans, which catch the thick tar and pitch, are emptied once a week. The dip-pipes are only sealed when the retorts are being discharged.

The producer fires are clinkered (with secondary bars in place) every 48 hours, ashes cleaned out (without the use of secondary bars) 24 hours after clinkering, and the fires are raked between the grate bars every 3 hours.

The coke charged into the producers is measured by volume, the measures having been standardized with kiln dried coke. All coke sold and used for other purposes is similarly measured. Large coke was at first used in the producers, but we are now using 2-inch coke, as it gives a better producer gas on account of a larger hot surface being exposed. The amount of coke burned in the producers per square feet of grate surface per hour varies from 14 to 16 pounds.

## Sulphate of Ammonia: Some Details of Manufacture.

[Prepared for the Sixth Annual Meeting, American Gas Institute, by Mr. HOWELL FISHER, Boston, Mass.]

The manufacture of sulphate of ammonia in a plant of 25 to 30 tons capacity per day, while a comparatively simple process, has difficulties of operation that require experience and proper equipment to assure the economical and successful production of a commercial sulphate. Some of these difficulties are emphasized in the following description of the manufacturing operations:

As our plant has been in operation for over 12 years, our local and defined conditions may differ from those in plants of more recent construction; yet, certain fundamental elements of the manufacture would be much the same, the variations being chiefly a re-location of the different apparatus.

Sulphate plants of our type can be divided largely into two classes. First, using brimstone acid with the continuous saturator; second, using pyrites acid with intermittent saturator; our plant belongs to the second class. Brimstone acid enables the manufacturer to turn out a sulphate of good quality with little difficulty, whereas pyrites acid may cause a variety of trouble. With pyrites acid it is not advisable to use a continuous saturator; hence the reason for the two groupings.

To obtain a good, grey-white sulphate from pyrites acid, it is absolutely necessary to remove the sulphides of arsenic from the saturator. This can only be done soon after the saturator is put in operation, and before the acid reaches its highest temperature. The sulphides begin to form as soon as the gas is admitted to the box, slowly rising to the surface. This scum increases in thickness, sometimes to as much as an inch, and varies in color from light yellow and green to a dark brown. The higher the arsenic the greener the sulphides. A clapboard or thin board is used to collect this scum into one corner of the saturator, where it is removed by a strainer made of sheet copper, $\frac{1}{16}$-inch thick, slightly bent, and perforated with $\frac{1}{16}$-inch holes.

In the continuous saturator these sulphides cannot be collected, hence remain in the salt, giving it a yellowish-brown color, which is very objectionable. The same thing holds true at times with the intermittent saturator, if the acid contains too much arsenic, as it cannot be wholly collected from the surface, and is then found in the sulphate.

For successful operation, acid of not under 52° B. should be used; acid of a lower test results in an accumulation of mother liquor, and the disposal of mother liquor is quite troublesome. About the only way to dispose of the excess of mother liquor is by evaporation, using steam through a lead coil in a lead-lined box, dipping out the salt as it is deposited. The salt, however, is not then satisfactory, as it is usually quite acid; moreover, the expense of the process is high because of the necessity of using live steam in the coil to obtain sufficient temperature for evaporation. Gas liquor can be used to neutralize the mother liquor before evaporation, to obtain a more neutral sulphate; but this procedure largely increases the amount of liquor to be evaporated, and it is dangerous to the operator, because of the liberation of large quantities of hydrogen sulphide.

Acid is received in tank cars of 50 tons capacity. They are unloaded by air pressure into an underground tank, a rubber hose with brass connections being used for the discharging connection. From this tank the acid flows by gravity to an air-operated pump that elevates the acid to storage tanks under the roof of the building. The discharge from the pump is into a lead drum above the tanks, to provide for the air discharge with the acid, thus preventing any splashing. The outlets of these storage tanks are in the bottoms, and can be closed by a plug in case of emergency. Below these plugs in the pipe line is a valve for each tank to facilitate repairs to the line and tanks. The acid runs by gravity to each saturator with a valve for aach outlet, and, further, a valve on a low point on a pipe for draining in case of repairs. All of these valves are of cast lead of the globe valve type.

The operation of the saturator is as follows: The box is filled with acid and mother liquor, or, not having sufficient mother liquor, with water to the proper height, making the strength 38° to 40° B. This strength should vary according to the salt capacity of the box, and should be such that the box is not choked with salt before the acid is neutralized. After turning on the gas, as soon as the bath gets near the boiling point the operator collects the scum as previously described. For the next 2 or 3 hours no attention is necessary, other than to see that the proper temperature of the bath is maintained. This is best done by observing the temperatures of the inlet gases. If they rise above 95° C. there is danger of steam condensation in the box, which increases the volume and may cause an overflow. When the salt begins to deposit freely, it is necessary for the operator to push back the salt from the curtains to assure a circulation of the acid, otherwise the salt will be blackened or "burnt," as it is called. When the strength of the bath drops to 32° B. the gas is shut off, as that is almost the neutralization point. If the bath is allowed to become alkaline it will turn black from sulphides and spoil the color of the salt.

The salt and mother liquor are now dropped into the settling box through the outlet pipe, the mass being allowed to remain for several hours to cool, in order that as much salt as possible will crystallize out of the mother liquor. It is then drained, shoveled into a cart, taken to the centrifugal machine and dried, then wheeled to the storeroom.

The handling of the mother liquor is somewhat difficult, because as it cools salt crystallizes out very freely and quickly closes the pipes. All the mother liquor from settling boxes, centrifugal machines, etc., collects in lead-lined cisterns under the main floor of the building, several catch-boxes being interposed on the way to remove the salt that is carried along mechanically, and thus keeping down the accumulation in the cisterns.

The pump and pipe connections for mother liquor are shown in

Plate 4. A brass pump is used for elevating the mother liquor from the cisterns to the saturator, the piping arrangements being shown on the drawing. A gum rubber suction hose is used in the cistern and connects above the floor to brass pipe. This makes a flexible arrangement for the varying amounts of salt and liquor in the cisterns. The manifold drum on the discharge is to prevent the crystallization of the mother liquor in the pipes when not in use, as each pipe is drained after being used. The pump and connections are frequently washed out with water to prevent accumulations of salt, the water being pumped from the sink through the pump and back into the sink.

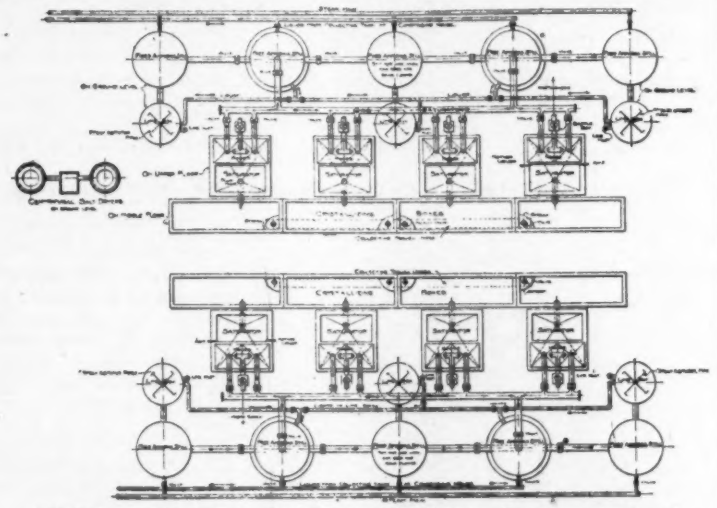


**Plate 1.**—Sulphate of Ammonia Plant. Plan Showing General Arrangement.

The general arrangement of the plant is shown in Plate 1; and a diagram elevation of one set of apparatus is shown in Plate 2.

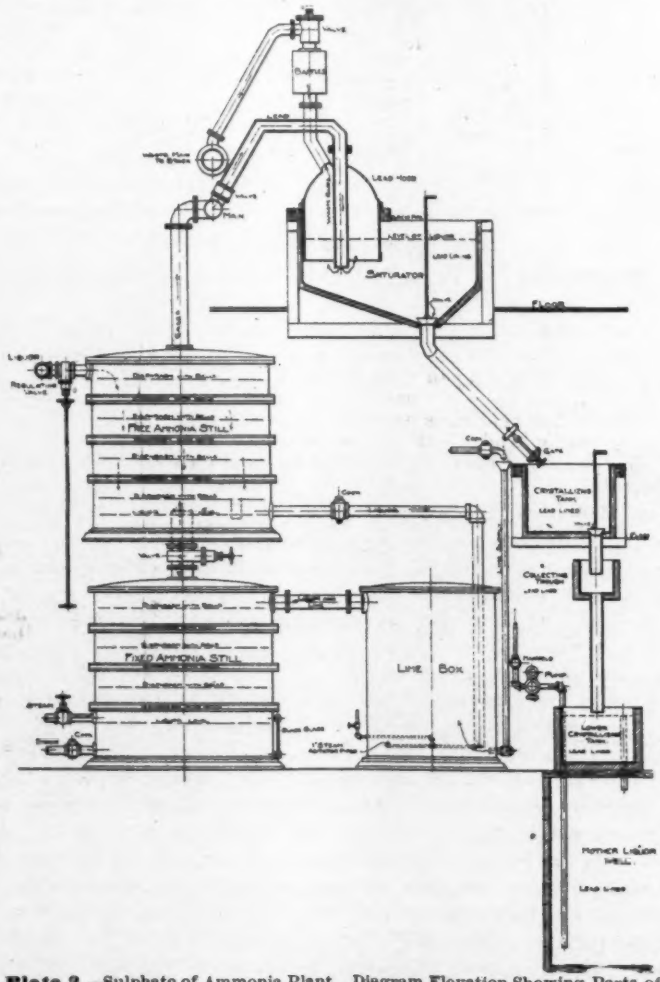



**Plate 2.**—Sulphate of Ammonia Plant. Diagram Elevation Showing Parts of One Set of Apparatus.

It will be noticed that the stills' arrangement is three of lime to each two free stills. The reason for this is largely because for several years the coal used in the plant gave a high percentage of fixed ammonia compounds, requiring the use of a large amount of lime. This, of course, necessitated frequent cleaning of the stills; and with this arrangement two stills could be out of commission all of the time. The fixed ammonia still is shown (in plain and section) in Plate 3.

The liquor is supplied to the free stills by gravity from an elevated tank, giving a practically constant head. Feed valves are of the all-

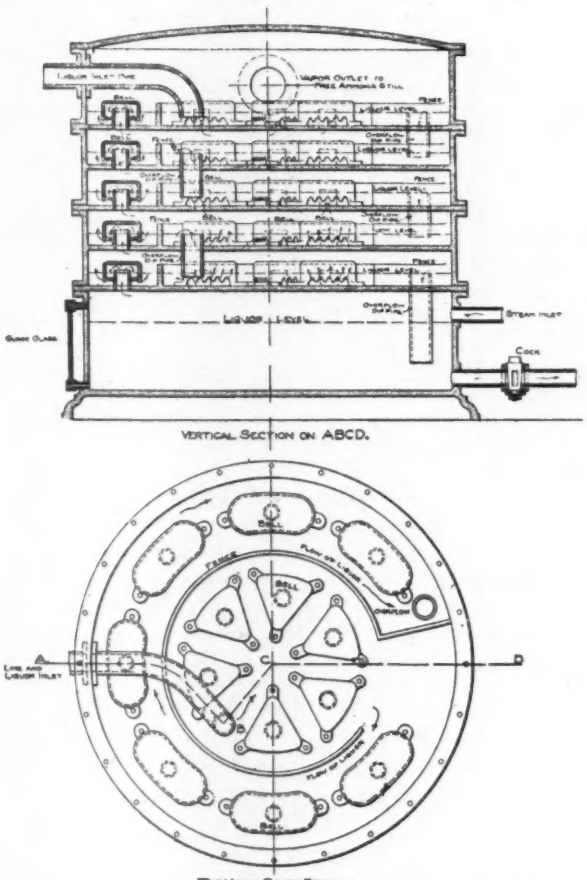



**Plate 3.**—Sulphate of Ammonia Plant. Fixed Ammonia Still.

*Note* 1.—Flow of liquor in section below tip marked *D* is in opposite direction.

*Note* 2.—Free ammonia still has 6 tiers of bells, the additional one being in the lower ection. Gas inlet to these stills is through the bottom head.

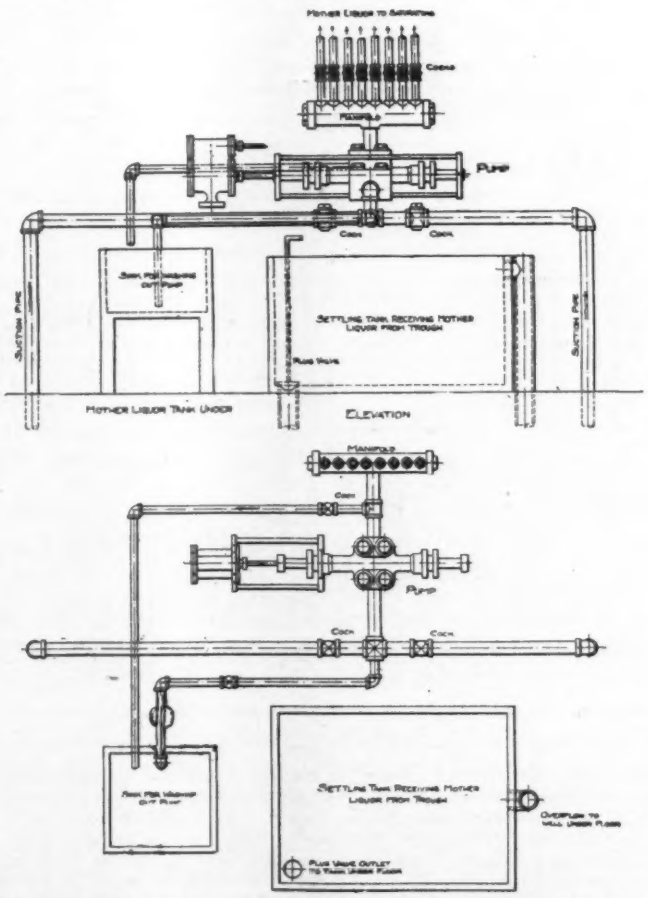



**Plate 4.**—Sulphate of Ammonia Plant. Pump and Connections for Mother Liquor.

iron style, with long extension stems, to enable operator to reach them from the floor. Steam for the stills is supplied principally at the bottom of the lime, some in the lime box for agitation, with a small auxiliary supply at the bottom of the free still. In both cases boiler pressure steam is used, being throttled as admitted. The

amount is governed wholly by the operator's tests of the waste liquor and the temperature of the distilled gases. The saturators are placed on an upper floor. This has many advantages, principally that the handling of the salt is largely by gravity; it also prevents boiling over of the stills when being forced, and thus prevents iron salts from being deposited as ferrocyanides in the sulphate, with their well known blue color.

The saturators (shown in Plate 2) are of a wooden frame, square type, with double-square bells. Practically all of the lead work is ¼ inch thick and is serviceable without repairs for at least 5 years, while small repairs will add 3 more years to the box before relining. The capacity of the box is about 5,000 pounds dried salt.

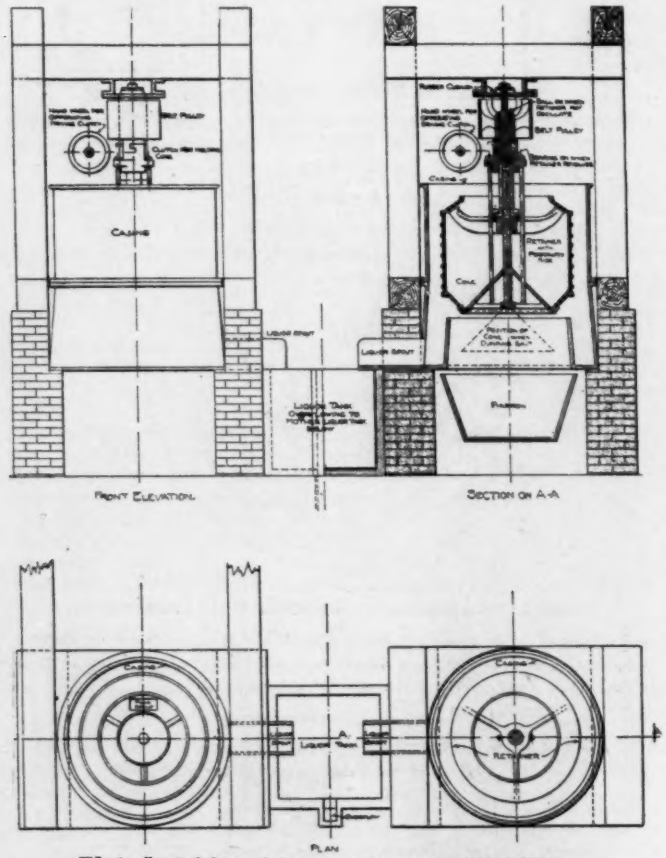



**Plate 5.**—Sulphate of Ammonia Plant. Centrifugal Driers.

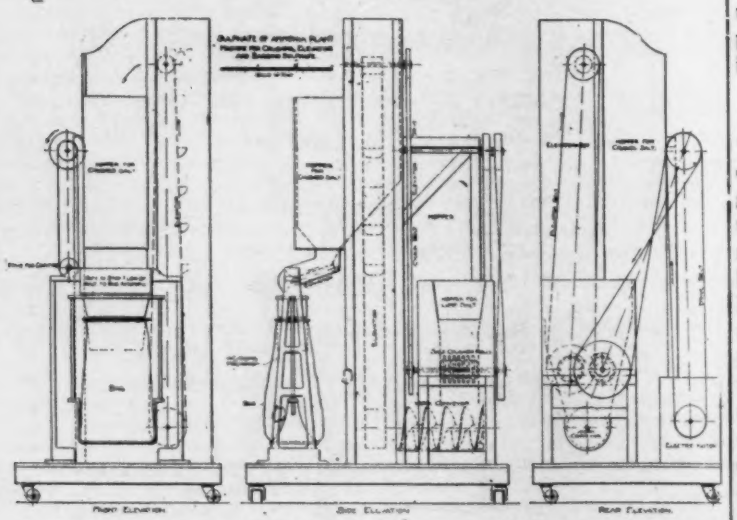


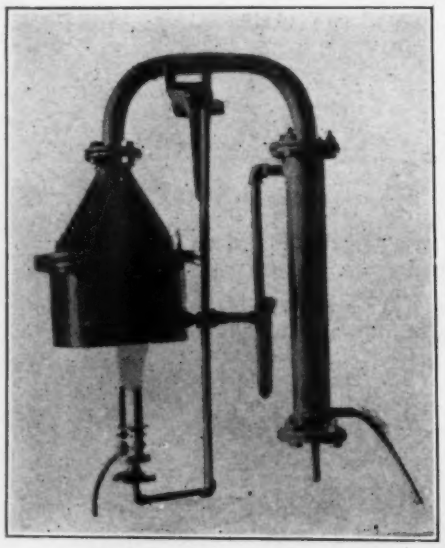
**Plate 6.**—Sulphate of Ammonia Plant. Machine for Crushing, Elevating and Bagging Sulphate.

The plug shown in the bottom of the box is merely for the safety of the operator in removing the valve on the bottom of the outlet pipe. This valve is simply a flat plate with a gum rubber disk held by pressure against the end of the pipe. The salt, after draining, is shoveled into a square, 2-wheeled, wooden cart, which is wheeled to the centrifugal machine, being dumped through a brass chute into the basket. The basket is run at slow speed until the charge (of about 800 pounds) is all poured in. This is necessary because of the sticky nature of the sulphate, as fast running will cause uneven loading with possibly disastrous results.

A drawing of the centrifugal machine is shown in Plate 5. The basket has a drop bottom that is raised by a lever and secured by a clutch. The basket, bottom, shaft, etc., are all of brass, and have a life of from 1½ to 2 years. The envelope and liquor collector around this basket are made of sheet lead, which forms a very satisfactory and safe casing. It is essential that the sulphate should be allowed to remain in storage for 4 or more days before shipping, to prevent shrinkage in transit, so accordingly it is piled on a wooden floor. From storage the salt is loaded into bags with an automatic weighing machine, shown in Plate 6. The salt caking in storage is broken up by picks and shoveled into a crusher th at disposes of all the lumps. It is elevated by a bucket conveyor into a hopper over the bagging machine into which it is fed by gravity. The capacity of the machine is from 3½ to 4 tons per hour, which is the capacity of the crusher.

The drawings give many details that have not been included in this description. The primary object of the paper is to point out some of the many troublesome points which are not usually mentioned in text books, yet which are of prime importance in the maintenance and operation of an ammonium sulphate plant.

## Management & Commercial Methods.



AN AUTOMATIC WATER STILL.—The Booth Apparatus Company is putting on the market (in fact, has been selling numbers of them for some time) an automatic water still, catalogued as "Type E.," the nature of which is so plain that an inspection of the illustration will be sufficient to comprehend its construction and manner of operation. "Type E" will distill 1.6 liters of water per hour with a use of 7.3 liters of water and 10 cubic feet of gas. It is of all-brass and copper construction, substantially built and matched, with burner and mounting-band, complete.

## Items of Interest
### FROM VARIOUS LOCALITIES.

MESSRS. GRAHAM & CO., 435 Chestnut street, Philadelphia, informs us that Mr. Morris James Loxley, formerl y of the M. J. Loxley Company (Land Title Building, same city), is now associated with them in their bond department.

"B.," WRITING under date of the 5th inst., sends these "Notes:" "The 28th ult., saw the opening of the new offices and showroom of the Amherst (Mass.) Gas Company. Mr. Willard is to be congratulated on the neatness and completeness of the display; also, upon the cleverness with which his staff assisted in entertaining nearly 1,000 visitors on the opening nigh t.——New Jersey can safely be credited with the finest and most up-to-date show rooms where the Public Service 'serves.' The opening of the Camden (N. J.) showroom and office was made October 23d. The arrangement of the displays was irreproachable, and the interesting exhibits and convincing demonstrations bespoke well the care and thought given to same by Division Agent, Mr. S. J. Corliss. The window display was especially attractive. It carried a library arranging, and a model dining room was shown. Gas and electric fixtures, portables and other devices usually placed for the furnishing of rooms of such types were displayed. The showroom proper was divided into two sections. On the right, gas lighting appliances in varied assortment were shown. The glassware in this connection was most attractive. Gas ranges, many in number and differing in capacity and make-up, water heaters, hot plates, toasters—in fact, all sorts of fuel appliances were in line, connected up, ready for demonstration. The crowning glory perhaps was a model kitchen of the gas type, that lacked not a thing respecting completeness. On the left, electric fixtures and portables, in all modern designs, were shown, also a varied equipment of electric cooking utensils, and a model electric kitchen as well. An interesting feature of a semi-scientific type which attracted much attention was the cabinet exemplifying color absorption, candle powers being the same. The center of the showroom was utilized in the displaying of an electric car—some called it a 'pleasure

vehicle,' electric signs and the like. The showroom proper, covering an area contained in all 80 feet by 60 feet, was lighted by means of 8 unit fixtures, using 500-watt lamps. This illumination was the idea of Mr. Corliss and its practicability was commented on very favorably. Nearly 3,000 consumers visited the showroom the opening week, many of the visitors spending several interesting hours in the inspection and demonstration of the many devices shown. Division Manager Corliss is assisted by the following associate corps: Chief Clerk, James Barnes; Cashier, J. Thompson; Adolph Quimby, Assistant Cashier; Reese Latch, New Business, gas; A. S. V. Young, New Business, electric; Solicitors, J. J. Solm, J. S. Brady, W. Nichols, H. Duval, J. J. Crerand, Jos. Goodman, E. Weigert, L. B. Brewster, E. B. Hoxworth and D. Crawford, all of whom, by their able assistance, added much to the success of the opening."

THE Laclede Gas Light Company, of St. Louis, Mo., has enjoyed the most prosperous year in its history, according to the annual statement made public the 30th ult. This, too, in view of the fact that its dividend increase during the year (from 6 per cent. to 7 per cent.) resulted in no drain on its surplus account. In fact, that section for the year shows a net gain amounting to $89,471.

THE plant of the Burlington (Kas.) Gas Company (natural sort), leases, pipe lines and all went under the hammer, at Sheriff's sale, in Dayton, O., the afternoon of October 25th. Judge Dennis Dwyer, of Dayton, bid $4,000 for the property; and he got it. The sale was made to satisfy a judgment amounting to $4,000.

THE Attorney General, of New York, and the Corporation Counsel, of New York city, have withdrawn their answer and objections to the petition filed before Referee William Allen, by the East River Gas Company, under which the latter asked that a Condemnation Commission be appointed to award damages for the tunnel under construction under the East river, by means of which the transportation of gas from Ravenswood and Astoria to New York and Bronx Borough will be carried on.

THE handsomest business show place in Rome, Ga., is that occupied by the Municipal Gas Company, wherein to receive its customers and to display the many apparatus that go, through the help of gas, to make the home beautiful, and the kitchen a housewife's harbor, safe, sound and satisfying. Those who are inclined to pursue the subject further can have all necessary proof of our statement respecting it if they will ask President James Ferrier to forward them postal cards which carry an illustration of the premises under consideration.

WE are informed that a course of lectures on electrical processes and procedure, will be given this winter in the physical laboratory of the Johns Hopkins University, for the especial benefit of the employees of the Baltimore Consolidated Gas, Electric Light and Power Company. It should also be said that the course will be given in connection with the work of the Company Section of the National Electric Light Association. The first meeting of the Section was held the night of October 31st, and the work of the season outlined by Messrs. Douglass Burnett, R. H. Tillman, R. F. Bonsall and others. The officers elected at this session were as follows: President, R. H. Tillman; Vice-President, A. S. Joizeaux; Secretary, D. C. Bruce; Treasurer, R. F. Bonsall; Executive Committee, Douglass Burnett, Wm. Schmidt, Jr., A. W. Bull, R. C. Niles, Jr., E. D. Edmanston, J. T. Kelly and G. H. Albrecht.

"T. R. V.," writing from North Yakima, Wash., under date of the 28th ult., says: "Adding 50 per cent. to the gas making capacity of the Pacific Power and Light Company, of this city, the new plant in this place, which will cost approximately $100,000, is nearing completion under the direction of Superintendent of Construction, Mr. R. J. Jenks, of Portland. It is expected to be ready for use by January 1, 1912. New buildings, completely equipped with modern machinery, have been contracted for and are being properly installed. As an instance of the increase in facilities for distribution account the new holder will bring the storage capacity up to 300,000 cubic feet."

A PLANT up to supplying the gaseous needs of Pittsburg, Antioch and Martinez (Contra Costa district of California), will be constructed forthwith in the first named place. While it is not thought it will be necessary to go outside of the district concerned to raise the capital required, it is nevertheless true that San Francisco investors will supply any deficiency on such account. The expenditure will be not far from $150,000.

THE merger of the Chicopee (Mass.) Company with the Springfield (Mass.) Company, was determined by the shareholders under a call for the consideration of that project. In fact, the proceedings were informal.

THE Michigan Gas Association's representatives or holders (it now maintains two) in the Gas Fellowship Course, Michigan University, are: Mr. Louis Nodell, of Coldwater, and Mr. Dale Chamberlain, of Ann Arbor.

A TRINITY, composed of Messrs. Jordan Massee and Walter T. Johnson with T. F. Wickham, of New York, have petitioned the authorities of Macon, Ga., for the right to operate a gas enterprise in opposition to the existing Macon Gas Company. It is to be known as the Central Georgia Gas Company, and the people behind the movement are said to control the Central Georgia Power Company and the Macon Railway and Light Company. They have lodged their petition for a charter with the Superior Court. Here is an opportunity for the State Commission to consider ethics, practical ethics.

THE proprietors of the Anderson (Ind.) Gas Company have announced that hereafter all gas bills will be made out on the base rate of $1 for the first 1,000 cubic feet, and 85 cents for each additional 1,000 cubic feet, with a rebate of 10 per cent. on all accounts settled within 10 days. This rate is a very low one, for the territory named. In fact, when Anderson was altogether supplied with natural gas, which supply failed some months ago, the rate for small consumers amounted to 50 cents per 1,000.

THE 63d Annual Report of the Consumers' Gas Company, of Toronto, Ont., which was issued towards the close of October is surely a record of great work well done. The output for the twelvemonth was 2,843,041,000 cubic feet, as against 2,247,000,000 cubic feet in 1910. The main system was increased by the placing of 33 miles of pipe, and the system now totals 456 miles. The number of new services put in was 6,152; meters, new, 7,195; dividends took up $416,180; the sum of revenue increase for the year was $57,824.82—the total having been $1,857,071. The new station (known as B.) is virtually completed, and when in action it will prove equal to an output of 5 millions cubic feet per day. The total receipts on all accounts ($2,214,873) include the premiums on stock sales. The capital stock account figures out $4,370,500.

THE Stacey Manufacturing Company, of Cincinnati, O., has been awarded the contract for the construction of a storage holder, up to retaining 200,000 cubic feet, on the municipal gas plant, Charlottesville, Va.

"H. B.," forwards the following under date of the 4th inst., from Manchester, N. H.: "The Strafford-York Gas Company, which is the title of the concern that has succeeded through purchase to the gas plants at Rochester and Great Falls (the latter is in Somersworth), has issued the announcement that, on and after the 1st prox., the gross rate per 1,000 would be $1.60, less a discount of 10 cents per 1,000 for prompt payment.

MANAGER H. M. MOORE, of the Austin (Tex.) Gas Company, is rejoicing in the knowledge that by January 1st, the new storage holder now underway will enable him to sleep sounder the coming days when the "Northers" sweep through that part of the big Lone Star State.

THE shareholders of the American Gas Company, at a special meeting held in Philadelphia the 3d inst., consented to the removal of the convertible privilege on $1,000,000 of its collateral bonds, due 1920.

AMONGST the witness tests recently conducted at the Hartford (Conn.) works of the Terry Steam Turbine Company we note the following: Brake test, for power and water rate, of a 50-horse power turbine, for the Charlestown (Mass.) Gas Company; a 50 kw. generator set for the Baird Machine Company, Stratford, Conn.; a calibration and water rate test on 212-horse power, Terry turbine, for the Consolidated (N. Y.) Gas Company; and a 50-kilowatt generator set for the Fletcher Engineering Company.

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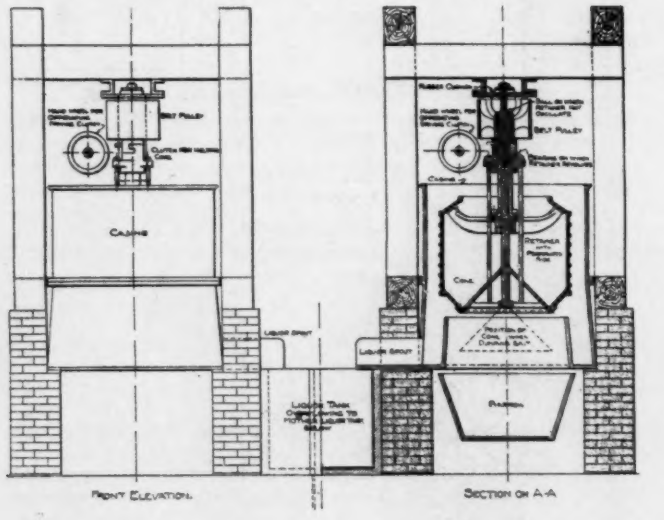
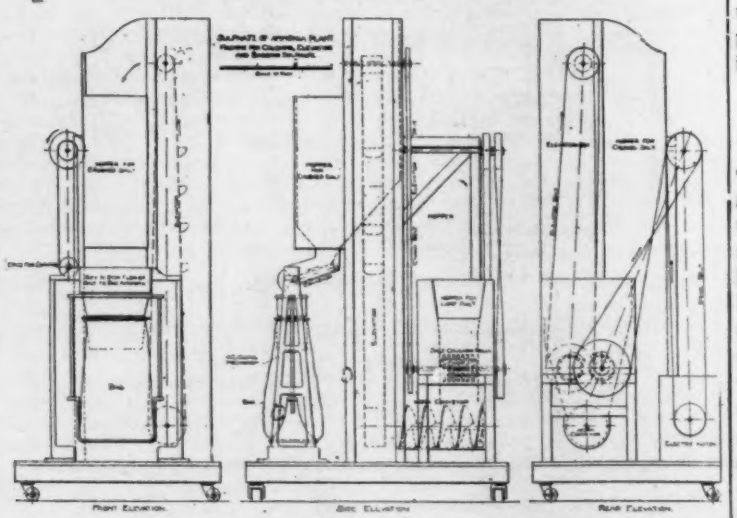



**Plate 5.**—Sulphate of Ammonia Plant. Centrifugal Driers.



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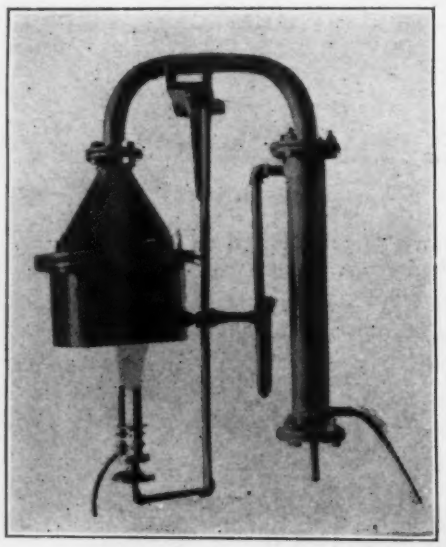

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### FROM VARIOUS LOCALITIES.

MESSRS. GRAHAM & CO., 435 Chestnut street, Philadelphia, informs us that Mr. Morris James Loxley, formerly of the M. J. Loxley Company (Land Title Building, same city), is now associated with them in their bond department.

"B.," WRITING under date of the 5th inst., sends these "Notes:" "The 28th ult., saw the opening of the new offices and showroom of the Amherst (Mass.) Gas Company. Mr. Willard is to be congratulated on the neatness and completeness of the display; also, upon the cleverness with which his staff assisted in entertaining nearly 1,000 visitors on the opening night.——New Jersey can safely be credited with the finest and most up-to-date showrooms where the Public Service 'serves.' The opening of the Camden (N. J.) showroom and office was made October 23d. The arrangement of the displays was irreproachable, and the interesting exhibits and convincing demonstrations bespoke well the care and thought given to same by Division Agent, Mr. S. J. Corliss. The window display was especially attractive. It carried a library arranging, and a model dining room was shown. Gas and electric fixtures, portables and other devices usually placed for the furnishing of rooms of such types were displayed. The showroom proper was divided into two sections. On the right, gas lighting appliances in varied assortment were shown. The glassware in this connection was most attractive. Gas ranges, many in number and differing in capacity and make-up, water heaters, hot plates, toasters—in fact, all sorts of fuel appliances were in line, connected up, ready for demonstration. The crowning glory perhaps was a model kitchen of the gas type, that lacked not a thing respecting completeness. On the left, electric fixtures and portables, in all modern designs, were shown, also a varied equipment of electric cooking utensils, and a model electric kitchen as well. An interesting feature of a semi-scientific type which attracted much attention was the cabinet exemplifying color absorption, candle powers being the same. The center of the showroom was utilized in the displaying of an electric car—some called it a 'pleasure

vehicle,' electric signs and the like. The showroom proper, covering an area contained in all 80 feet by 60 feet, was lighted by means of 8 unit fixtures, using 500-watt lamps. This illumination was the idea of Mr. Corliss and its practicability was commented on very favorably. Nearly 3,000 consumers visited the showroom the opening week, many of the visitors spending several interesting hours in the inspection and demonstration of the many devices shown. Division Manager Corliss is assisted by the following associate corps: Chief Clerk, James Barnes; Cashier, J. Thompson; Adolph Quimby, Assistant Cashier; Reese Latch, New Business, gas; A. S. V. Young, New Business, electric; Solicitors, J. J. Solm, J. S. Brady, W. Nichols, H. Duval, J. J. Crerand, Jos. Goodman, E. Weigert, L. B. Brewster, E. B. Hoxworth and D. Crawford, all of whom, by their able assistance, added much to the success of the opening."

THE Laclede Gas Light Company, of St. Louis, Mo., has enjoyed the most prosperous year in its history, according to the annual statement made public the 30th ult. This, too, in view of the fact that its dividend increase during the year (from 6 per cent. to 7 per cent.) resulted in no drain on its surplus account. In fact, that section for the year shows a net gain amounting to $89,471.

THE plant of the Burlington (Kas.) Gas Company (natural sort), leases, pipe lines and all went under the hammer, at Sheriff's sale, in Dayton, O., the afternoon of October 25th. Judge Dennis Dwyer, of Dayton, bid $4,000 for the property; and he got it. The sale was made to satisfy a judgment amounting to $4,000.

THE Attorney General, of New York, and the Corporation Counsel, of New York city, have withdrawn their answer and objections to the petition filed before Referee William Allen, by the East River Gas Company, under which the latter asked that a Condemnation Commission be appointed to award damages for the tunnel under construction under the East river, by means of which the transportation of gas from Ravenswood and Astoria to New York and Bronx Borough will be carried on.

THE handsomest business show place in Rome, Ga., is that occupied by the Municipal Gas Company, wherein to receive its customers and to display the many apparatus that go, through the help of gas, to make the home beautiful, and the kitchen a housewife's harbor, safe, sound and satisfying. Those who are inclined to pursue the subject further can have all necessary proof of our statement respecting it if they will ask President James Ferrier to forward them postal cards which carry an illustration of the premises under consideration.

WE are informed that a course of lectures on electrical processes and procedure, will be given this winter in the physical laboratory of the Johns Hopkins University, for the especial benefit of the employees of the Baltimore Consolidated Gas, Electric Light and Power Company. It should also be said that the course will be given in connection with the work of the Company Section of the National Electric Light Association. The first meeting of the Section was held the night of October 31st, and the work of the season outlined by Messrs. Douglass Burnett, R. H. Tillman, R. F. Bonsall and others. The officers elected at this session were as follows: President, R. H. Tillman; Vice-President, A. S. Joizeaux; Secretary, D. C. Bruce; Treasurer, R. F. Bonsall; Executive Committee, Douglass Burnett, Wm. Schmidt, Jr., A. W. Bull, R. C. Niles, Jr., E. D. Edmanston, J. T. Kelly and G. H. Albrecht.

"T. R. V.," writing from North Yakima, Wash., under date of the 28th ult., says: "Adding 50 per cent. to the gas making capacity of the Pacific Power and Light Company, of this city, the new plant in this place, which will cost approximately $100,000, is nearing completion under the direction of Superintendent of Construction, Mr. R. J. Jenks, of Portland. It is expected to be ready for use by January 1, 1912. New buildings, completely equipped with modern machinery, have been contracted for and are being properly installed. As an instance of the increase in facilities for distribution account the new holder will bring the storage capacity up to 300,000 cubic feet."

A PLANT up to supplying the gaseous needs of Pittsburg, Antioch and Martinez (Contra Costa district of California), will be constructed forthwith in the first named place. While it is not thought it will be necessary to go outside of the district concerned to raise the capital required, it is nevertheless true that San Francisco investors will supply any deficiency on such account. The expenditure will be not far from $150,000.

THE merger of the Chicopee (Mass.) Company with the Springfield (Mass.) Company, was determined by the shareholders under a call for the consideration of that project. In fact, the proceedings were informal.

THE Michigan Gas Association's representatives or holders (it now maintains two) in the Gas Fellowship Course, Michigan University, are: Mr. Louis Nodell, of Coldwater, and Mr. Dale Chamberlain, of Ann Arbor.

A TRINITY, composed of Messrs. Jordan Massee and Walter T. Johnson with T. F. Wickham, of New York, have petitioned the authorities of Macon, Ga., for the right to operate a gas enterprise in opposition to the existing Macon Gas Company. It is to be known as the Central Georgia Gas Company, and the people behind the movement are said to control the Central Georgia Power Company and the Macon Railway and Light Company. They have lodged their petition for a charter with the Superior Court. Here is an opportunity for the State Commission to consider ethics, practical ethics.

THE proprietors of the Anderson (Ind.) Gas Company have announced that hereafter all gas bills will be made out on the base rate of $1 for the first 1,000 cubic feet, and 85 cents for each additional 1,000 cubic feet, with a rebate of 10 per cent. on all accounts settled within 10 days. This rate is a very low one, for the territory named. In fact, when Anderson was altogether supplied with natural gas, which supply failed some months ago, the rate for small consumers amounted to 50 cents per 1,000.

THE 63d Annual Report of the Consumers' Gas Company, of Toronto, Ont., which was issued towards the close of October is surely a record of great work well done. The output for the twelvemonth was 2,843,041,000 cubic feet, as against 2,247,000,000 cubic feet in 1910. The main system was increased by the placing of 33 miles of pipe, and the system now totals 456 miles. The number of new services put in was 6,152; meters, new, 7,195; dividends took up $416,180; the sum of revenue increase for the year was $57,824.82—the total having been $1,857,071. The new station (known as B.) is virtually completed, and when in action it will prove equal to an output of 5 millions cubic feet per day. The total receipts on all accounts ($2,214,873) include the premiums on stock sales. The capital stock account figures out $4,370,500.

THE Stacey Manufacturing Company, of Cincinnati, O., has been awarded the contract for the construction of a storage holder, up to retaining 200,000 cubic feet, on the municipal gas plant, Charlottesville, Va.

"H. B.," forwards the following under date of the 4th inst., from Manchester, N. H.: "The Strafford-York Gas Company, which is the title of the concern that has succeeded through purchase to the gas plants at Rochester and Great Falls (the latter is in Somersworth), has issued the announcement that, on and after the 1st prox., the gross rate per 1,000 would be $1.60, less a discount of 10 cents per 1,000 for prompt payment.

MANAGER H. M. MOORE, of the Austin (Tex.) Gas Company, is rejoicing in the knowledge that by January 1st, the new storage holder now underway will enable him to sleep sounder the coming days when the "Northers" sweep through that part of the big Lone Star State.

THE shareholders of the American Gas Company, at a special meeting held in Philadelphia the 3d inst., consented to the removal of the convertible privilege on $1,000,000 of its collateral bonds, due 1920.

AMONGST the witness tests recently conducted at the Hartford (Conn.) works of the Terry Steam Turbine Company we note the following: Brake test, for power and water rate, of a 50-horse power turbine, for the Charlestown (Mass.) Gas Company; a 50 kw. generator set for the Baird Machine Company, Stratford, Conn.; a calibration and water rate test on 212-horse power, Terry turbine, for the Consolidated (N. Y.) Gas Company; and a 50-kilowatt generator set for the Fletcher Engineering Company.

## The Market for Gas Securities.

The good work continues; that is, the Courts are saying that Mr. Wickersham's contentions were more contentious than justifiable, whereby his acts or suit bringings are being to a large degree nullified. It seldom falls to the lot of one lawyer to make greater opportunities for himself than those that came the Wickersham way. Meanwhile the public as usual sing dumb. The net result in Consolidated is a gain of 2 points or so. It is 142 to 143.

The marvel, though, is Brooklyn Union, which was, at noon to-day (Friday), 13 points higher than last week at this time. The annual meeting is set for Tuesday, and it is likely that the question of capital readjustment will be discussed. The general situation favors the invester at last.

## Gas Stocks.

**Quotations by George W. Close, Broker and Dealer in Gas Stocks.**

115 BROADWAY, NEW YORK CITY.

NOVEMBER 13.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

| *N. Y. City Companies.* | *Capital.* | *Par.* | *Bid.* | *Asked* |
|---|---|---|---|---|
| Consolidated Gas Co. | $78,177,000 | 100 | 141¾ | 142 |
| Central Union Gas Co.— | | | | |
| 1st 5's, due 1972, J. & J. | 3,000,000 | 1,000 | 103 | 105 |
| Equitable Gas Light Co.— | | | | |
| Con. 5's, due 1932, M. & S. | 1,000,000 | 1,000 | 115 | 118 |
| Mutual Gas Co. | 3,600,000 | 100 | 155 | 165 |
| New Amsterdam Gas Co.— | | | | |
| 1st Con. 5's, due 1948, J. & J. | 11,000,000 | 1,000 | 100 | 101½ |
| New York & Richmond Gas | | | | |
| Co. (Staten Island) | 1,500,000 | 100 | 35 | 50 |
| 1st Mtg. Gold Bds. 5 p. ct. | 1,000,000 | — | 98¼ | 100½ |
| New York and East River— | | | | |
| 1st 5's, due 1944, J. & J. | 3,500,000 | 1,000 | 103 | 105 |
| Con. 5's, due 1945, J. & J. | 1,500,000 | — | 95 | 100 |
| Northern Union— | | | | |
| 1st 5's, due 1927, J. & J. | 1,250,000 | 1,000 | 94 | 100 |
| Standard | 5,000,000 | 100 | 50 | 70 |
| Preferred | 5,000,000 | 100 | 70 | 100 |
| 1st Mtg. 5's, due 1930, M. & N. | 1,500,000 | 1,000 | 103 | 105 |
| The Brooklyn Union | 15,000,000 | 1,000 | 143 | 143½ |
| 1st Con. 5's, due 1945, M. & N. | 15,000,000 | — | 106¾ | 107 |
| Yonkers | 999,650 | 500 | 130 | — |
| *Out-of-Town Companies.* | | | | |
| Bay State | 50,000,000 | 50 | ⅜ | ½ |
| " Income Bonds | 2,000,000 | 1,000 | — | 75 |
| Binghampton Gas Works, | 450,000 | 100 | — | — |
| " 1st Mtg. 5's | 509,000 | 1,000 | 95 | 100 |
| Boston United Gas Co.— | | | | |
| 1st Series S. F. Trust | 7,000,000 | 1,000 | 82 | 85 |
| 2d " " " | 3,000,000 | 1,000 | 47½ | 50 |
| Buffalo City Gas Co. | 5,500,000 | 100 | 5 | 8 |
| Bonds, 5's | 5,250,000 | 1,000 | 59 | 60 |
| Capital, Sacramento | 500,000 | 50 | — | 35 |
| Bonds (6's) | 150,000 | 1,000 | — | — |
| Chicago Gas Co. Guaranteed | | | | |
| Gold Bonds | 7,860,000 | 1,000 | 104 | 106¼ |
| Cincinnati Gas and Electric | | | | |
| Co. | 20,500,000 | 100 | 92 | 93 |
| Columbus (O.) Gas Co., 1st | | | | |
| Mortgage Bonds | 1,500,000 | 1,000 | 96 | 98 |
| Columbus (O.) Gas Lt. & | | | | |
| Heating Co. | 1,682,750 | 100 | 90¼ | 91 |
| Preferred | 3,026,500 | 100 | 75½ | 80 |
| Consumers, Toronto | 2,000,000 | 50 | 200 | 204 |
| Consolidated, Baltimore | 13,460,084 | | — | — |
| Mortgages, 5's | 3,400,000 | | — | — |
| General Mortgage 4½ | 10,661,000 | | — | — |
| Con. Gas Co., Baltimore | | | | |
| City, 4½ | 2,751,000 | | — | — |
| Consolidated Gas Co. of N. J. | 1,000,000 | 100 | 15 | — |
| Con. Mtg. 5's | 976,000 | 1,000 | 92 | 95 |
| Bonds | 75,000 | — | — | 100 |
| Denver Gas and Electric | 3,500,000 | — | 102 | 105 |
| Detroit City Gas Co. | 6,580,000 | — | — | 50 |
| " Prior Lien 5's | 5,619,000 | 1,000 | 97 | 100½ |
| Detroit Gas Co., 5's | 881,000 | 1,000 | 75 | 80 |
| Equitable Gas & Fuel Co., | | | | |
| Chicago, Bonds | 2,000,000 | 1,000 | — | 101 |
| Essex and Hudson Gas Co. | 6,500,000 | — | 39 | 40 |
| Fort Wayne | 2,000,000 | — | — | — |
| " Bonds | 2,000,000 | — | 55 | — |
| Grand Rapids Gas Light Co., | | | | |
| 1st Mtg. 5's | 1,250,000 | 1,000 | 100 | 101 |
| Hartford | 750,000 | 25 | 190 | 200 |
| Hudson County Gas Co., of | | | | |
| New Jersey | 10,500,000 | — | 112 | 113½ |
| " Bonds, 5's | 10,500,000 | — | 106 | 106½ |
| Indianapolis | 2,000,000 | — | 78 | 83 |
| " Bonds, 5's | 2,650,000 | — | 104½ | 105 |
| Jackson Gas Co. | 250,000 | 50 | 88 | — |
| " 1st Mtg. 5's | 290,000 | 1,000 | 97 | 100 |
| Kansas City Gas Light Co., | | | | |
| of Missouri | 5,000,000 | 100 | — | 86 |
| Bonds, 1st 5's | 3,822,000 | 1,000 | 102 | 104 |
| Laclede Gas Co., St. Louis. | 10,000,000 | 100 | 105¾ | 106 |
| Preferred | 2,500,000 | 100 | 114 | 120 |
| Bonds | 10,000,000 | 1,000 | 102¾ | 103 |
| Lafayette Gas Co., Ind. | 1,000,000 | 100 | — | 60 |
| Bonds | 1,000,000 | 1,000 | 60 | 65 |
| Louisville | 2,370,000 | 50 | 143 | 145 |
| Madison Gas and Electric Co. | | | | |
| " 1st Mtg. 6's | 400,000 | 1,000 | 106 | 106¾ |
| Massachusetts Gas Companies, of Boston | 25,000,000 | 100 | 91 | 91½ |
| Preferred | 25,000,000 | 100 | 98¼ | 98½ |
| Montreal Gas Co., Canada | 3,000,000 | 100 | 218 | 218¾ |
| Nashville Gas Light Co. | 1,000,000 | 100 | 110 | — |
| Newark, N. J., Con. Gas Co. | 6,000,000 | — | 56 | 58 |
| Bonds, 6's | 6,000,000 | — | 137 | 138 |
| New Haven Gas Co. | 2,000,000 | 25 | 200 | — |
| Peoples Gas Lt. & Coke Co., | | | | |
| Chicago | 25,000,000 | 100 | 105¾ | 106 |
| 1st Mortgage | 20,100,000 | 1,000 | — | — |
| 2d " | 2,500,000 | 1,000 | 104 | — |
| Rochester Gas & Electric Co. | 2,150,000 | 50 | 88 | — |
| Preferred | 2,150,000 | 50 | 118 | — |
| Consolidated 5's | 2,000,000 | — | 104¾ | 105½ |
| San Francisco Gas Co., Cal. | 15,500,000 | — | — | — |
| St. Joseph Gas Co.— | | | | |
| 1st Mtg. 5's | 1,000,000 | 1,000 | 100 | 102 |
| St. Paul Gas Light Co. | 2,500,000 | 100 | — | — |
| 1st Mortgages, 6's | 650,000 | 1,000 | 104 | 105 |
| Extension, 6's | 600,000 | 1,000 | 112¾ | 115 |
| General Mortgage, 5's | 3,447,000 | 1,000 | 97 | 98 |
| Syracuse Gas Co., N. Y. | 1,975,000 | 100 | 50 | 55 |
| Bonds | 2,047,000 | 1,000 | 101 | 103 |
| Washington (D. C.) Gas Co. | 1,600,000 | 200 | 439 | 440 |
| 1st Mortgage, 6's | 600,000 | — | — | — |
| Western Gas Co., Milwaukee | 4,000,000 | — | — | — |
| Wilmington (Del.) Gas Co. | 600,000 | 50 | 389 | — |

# MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

*American Gas Institute.*—Annual meeting, October, ——, 1912. Atlantic City, N. J. Officers: President, Ira C. Copley, Aurora, Ills. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

*Canadian Gas Association.*—Annual meeting, ——— Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

*Empire State Gas and Electric Association.*—Next meeting, Syracuse, N. Y., Nov. 1911. Officers: President, R. M. Searle, Rochester, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

*Gulld of Gas Managers of New England.*—Annual meeting, March, 1912. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

*Illinois Gas Association.*—Annual meeting, time, March, 1912, Chicago, Ills. Officers: President, C. B. Strohn, Elgin, Ills.; Secretary-Treasurer, F. E. Newberry, Dixon, Ills.

*Illuminating Engineering Society.*—Annual meeting, Sept. ———1912, ——— Meetings of Sections, monthly. Pres't, A. E. Kennelly, Boston, Mass.; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York, Secretary, Albert J. Marshall, 16 East 40th street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, A. L. Eustice, 105 North Wabash avenue.

*Indiana Gas Association.*—Annual meeting, Jan. 17 and 18, 1912, Indianapolis. Officers: President, S. E. Mulholland, Fort Wayne; Vice-President, Howard L. Olds, Indianapolis; Secretary-Treasurer, Philmer Eves, Indianapolis.

*Iowa District Gas Association.*—Annual meeting, time, May, ——, 1912; Clinton, Ia. Officers: President, G. W. Clabaugh, Omaha, Neb.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

*Kansas Gas, Water and Electric Light Association.*—Annual meeting, time, Sept. 1912. Manhattan, Kas. Officers: President, B. F. Eyer, Manhattan, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

*Michigan Gas Association*—Annual meeting, time, Sept. ———1912,——— Officers: President, F. W. Blowers, Kalamazoo Mich ecretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

*Missouri Electric Light, Gas, Water Works and Street Railway Association.*—Annual meeting, April, 1912; St. Louis, Mo. Officers: President, F. E. Murray, Louisiana, Mo.; Secretary and Treasurer, N. J. Cunningham, Springfield, Mo.

*National Commercial Gas Association.*—Annual meeting, December, 1912. Atlanta, Ga. Officers: President, C. L. Holman, St. Louis, Mo.; Secretary, Louis Stotz, 29 West 39th street, New York City.

*Natural Gas Association.*—Annual meeting, May, 1912, Kansas City, Mo.; Officers: President, A. B. Macbeth, Independence, Kas. Secretary, T. C. Jones, Delaware, O.

*New England Gas Association.*—Annual meeting, third Wednesday in February, 1912 Boston. Officers: President, J. A. Coffin, Gloucester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

*New Jersey State Gas Association.*—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn, Belmar, N. J.

*Ohio Gas Association.*—Annual meeting, February 6 and 7, 1912, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary-Treasurer, T. C. Jones, Delaware, O.

*Oklahoma Gas, Electric and Railway Association.*—President, Noel R. Gascho, Alva Okla.; Secretary, H. V. Bozell, Norman, Okla.

*Pacific Coast Gas Association.*—Annual meeting, Sept. ———1912, ——— Officers: President, W. Baurhyte, Los Angeles, Cal.; Vice-President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

*Pennsylvania Gas Association.*—Annual meeting, April, 1912, Williamsport, Pa. Officers, President, C. W. Butterworth, Milton, Pa; Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

*Society of Gas Lighting.*—Annual meeting, December, 1911; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 254 West 39th street, New York city.

*Southern Gas Association.*—Annual meeting, April, 1912, Jacksonville, Fla. Officers, President, H. B. Hoyt, Jacksonville, Fla.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

*Southwestern Electrical and Gas Association.*—Annual meeting. April 27, 28, 29, 1912; Houston, Tex. Officers: President, J. E. Carroll, Beaumont, Tex.; Secretary, D. G. Fisher, Dallas, Tex.

*Wisconsin Gas Association.*—Annual meeting, May 15 and 16, 1912, Milwaukee, Wis. Officers: President, H. M. Buck, Waukesha, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.